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New Jersey Tries a 5-Cent Fare on a New Basis

THE four months trial of the so-called 5-cent fare in New Jersey is an experiment that will be watched with keen interest by the entire electric railway industry. It should be understood, however, that this is by no means a return to the nickel trolley fare which existed before the war. Under the new plan many former single-fare lines become two-fare lines, and the cost of the ride to dwellers in the suburban towns is now 10 cents, or twice the pre-war rate. Then, too, the abolition of the transfer means a 10-cent rate for thousands of trolley patrons. Only local riders in the larger communities will really have a 5-cent fare—but this is about 50 per cent of the total riders.

In the 146 municipalities in which the Public Service Railway operates may be found an infinite variety of traffic conditions. For example, the situation in Newark, a city of half a million people, is very different from that in Bergen County, where the largest town has a population of less than 20,000.

The nature of competition between the trolley company, the railroads and the buses is equally dissimilar in different sections of the state. In fact, the difficulty of establishing a single fare that would suit all the varied requirements of the situation has always been a stumbling block in the determination of a reasonable rate. No doubt alterations in the new arrangement will have to be made here and there to meet local conditions, but there is a good possibility that the fundamental principle of this plan may turn out to be the solution of the trolley problem in New Jersey.

Of course the buses are still there, and the company is still confronted with unfair competition, for the bus and the railway are by no means on an equal basis of taxation and other imposts. The main thing accomplished is that the insatiable clamor for a 5-cent fare is largely met—at least Jersey has what it can call a 5-cent fare. Many of the jitney patrons may therefore come back to the railway. Whether the number of such new railway patrons will be enough to produce an actual improvement in revenue remains to be seen.

The Future of the Rail-Bound Vehicle Is the Future of Transportation

THIS is an age of progress we are living in. The radical changes in car design described in the Annual Convention Number last week indicate that progressive electric railways are alive to that fact, and are acting to improve the facilities at hand to the best of their abilities. There is, however, a broader movement in the transportation field that must be reckoned with—the place which the rail vehicle will have in the transportation plans of the future.

Up to the present time there is no question that for heavy passenger and freight service electric railways and steam railroads can furnish the best service at a cost well below that possible by vehicles moving on the public highway. This has been proved time and time again. Several cities have had the unfortunate experience in the recent past of putting up with bus service exclusively, and all of them have been glad to get back to the old reliable trolley car.

There is, however, a field for the bus, and this field will be found. In its proper place the bus is a valuable auxiliary of the trolley. In some places it can do work the trolley cannot do equally well. Popular prejudice against the railway corporations have also had an effect in furthering the development of the bus, but attention to better public relations is counteracting this tendency.

The lesson derived from the recent experiments with exclusive bus transportation is that, where it is fitted to carry the traffic, the main difficulty is that the operators are also the owners of the vehicles, with no definite responsibility to anyone, and with very loose supervision from the busmen's associations and the public authorities. In consequence the practices indulged in have not been of the best. Courtesy and carefulness, which are demanded of the trainmen, have been sadly lacking.

Unregulated competition has all been on the side of the bus. It has not been subject to the same restrictions that have been imposed on the electric railway, partly because it is a new form of transportation, partly because there is no large fixed investment through which the owners can be reached, but more particularly because there is no competent head to the business, and it is difficult for the public to deal with a large number of individuals of various temperaments and desires and largely irresponsible.

To develop transportation facilities in any community as they should be developed demands that the problem be treated as a whole, and that a broad policy be adopted to fit each unit into its proper place in the scheme. Do this intelligently and community transportation will progress; otherwise it will go backward. The electric railway, having been in the field of urban transportation for many years, has built up the organization and has the background of experience fitting it to carry on the work of transportation for which it is trained and competent. If our urban systems need to be revamped, the present companies are the ones best fitted to do it, and they can utilize the existing investment to best advantage in any scheme whatever that contemplates increased facilities. In any community the rail lines should render at least the bulk of the service, and the buses should be co-ordinated with them in one coherent system. This will provide the cheapest and most satisfactory service.

It must not be forgotten, however, that there are rivals who are always looking for an opportunity to enter the field as competitors. Knowing little about the transportation business, but being able to command

funds, they appear willing to invest considerable sums in experiments that seem doomed to failure. But in making such experiments the railway itself may be bled by the competition until it, too, is forced to the wall.

Just how the transportation system will ultimately be worked out is a local problem for each community. In the larger cities rapid transit lines will, of course, take the heaviest part of the travel, particularly in the rush hours. This will be supplemented with surface cars and buses furnishing local and crosstown service, feeding the rapid transit lines. In smaller communities the trolleys will be used for mass transportation, the buses serving lines that do not require the most intense service or which have small peak-load demands. But in all save the smallest communities, where the local requirements are at a minimum, the electric car can and will do the work best, provided it is given a fair chance and the management shows a desire to progress and to co-operate with the residents.

Thus it is the duty of the railway man to look to the future, to plan ahead farther than he ever has done before, and to keep the situation well in hand so that he is able and ready to meet the demands of modern travel. In this way he can conserve the investment his company has made and utilize it also for the interests of the public at large.

In fact, it now appears that while there may be some doubt as to the future financial success of the railway by itself, there is no doubt that the future of transportation—railway, bus and whatever other vehicle comes along, in a combined, co-ordinated system—will be one of substantial success.

The Eternal Conflict Between Divisional and Departmental Organization

WHEN an electric railway supplies service to a number of more or less isolated communities, problems of organization arise which do not occur with a more centralized system. On the latter, it is usual, of course, to have all division superintendents and foremen report directly to their respective department chiefs.

Where there are distinct and independent communities to be served, however, it is often desirable to adopt a divisional rather than a departmental system of responsibility and control. The reason for this is that the public relations in the independent community can often be improved if a division manager, with considerable responsibility for the operation of the service in his division, can be substituted for a division superintendent with little or no authority. But with a plan of this kind, to whom should the local maintenance-of-way man and local repair-shop superintendent report?

Practice differs in this matter. Obviously, in questions relating to engineering standards to be used, the head engineering office should control, but on any other subject the division manager might want to have a good deal to say, if not the deciding voice.

There are advantages in both the divisional and departmental plans. It is traditionally hard to have to report to two masters, yet with the divisional plan this is just the position in which the local shop superintendent and way engineer are placed. Reasons of efficiency will tend to urge the departmental arrangement, public relations the divisional plan. A combination of the two, in different proportions to suit each case, is probably the only course which can be recommended.

It Isn't So Much the "Rubber Urge" as the Desire for Continuous Running

THIS is an age of rubber, but it is also an age of continuous motion. Applied to mass transportation, it isn't so much a question of rubber as it is a matter of uninterrupted running that the people want. The most uncomfortable factor in a street car ride is the frequent stopping. Instead of permitting ourselves to feel that the rubber urge cannot be counteracted, perhaps we would do much better to study the local situation with an idea of determining how to secure such traffic regulation as will enable more nearly continuous motion of the street cars.

Application of the principle of express service to street cars has been tried to only a very limited extent, and then usually without correlated traffic regulations. By setting aside certain streets for this type of service, just as we now set aside certain boulevards for through automobile traffic, it would be possible greatly to increase the speed and pleasure of transportation by street car. One of the reasons for the unprecedented development of automobiles has been the education of the public, inspired by automotive manufacturers, to the fact that adequate traffic regulations are as important to the utility of the automobile in cities as the design of the vehicle itself. This is equally true of the street car, but it has not been "sold" to the public. Every attempt to improve street car operation, as for example the skip stop, is met by vigorous protest on the part of local business interests and petty politicians.

When we realized that vehicular congestion was limiting the utility of the automobile we established express streets or through boulevards. The establishment of supplementary through traffic streets in ordinary residence districts has been a more recent development of this idea. All of this is for expediting what to at least a large degree is non-necessity traffic. It serves the privileged minority rather than the masses.

When we approach the problem of providing transportation for the masses who daily ride the street car systems of our larger cities, however, we allow the interests of the corner store merchant, whose business is made better at his location by the presence of the car line, absolutely to prevent any material improvement in the type of service rendered for transporting the workers, upon whose regular movement back and forth each day the very foundation of the entire economic and social structure is built!

In addition we do other peculiar things. We carefully regulate boulevard traffic so that slower moving cars will keep to the right and allow the faster moving stream to proceed through the center of the street. On car lines, however, we allow slow horse-drawn vehicles to keep to the tracks with immunity, which results in slowing up the entire stream of necessity traffic. We also carefuly regulate parking on boulevards or through traffic streets, but we often allow unrestricted and promiscuous parking on car line streets.

In most cities the construction of elevated or subway structures, which in addition to being expensive are either unsightly or uncomfortable, is entirely unwarranted. A service approaching rapid transit in speed and safety may be provided by the establishment of express surface car streets. Here, a maximum of one or at most two stops per mile would be made. The local traffic would be handled by frequent local service on adjacent parallel streets—perhaps using buses instead of cars.

Mechanical and Electrical Equipment Keeps Pace—II

Brakes Redesigned for Newer Conditions—Component Parts More Rugged and of High-Grade Materials—Tendencies Toward Simplified Multiple-Unit Control—Current Collectors Improved—Motors and Trucks Covered in Last Week's Article

ADVANCES in design of the equipment of the modern car have not been confined to the trucks and motors, which were discussed in the article on this subject in last week's Annual Convention Number of ELECTRIC RAILWAY JOURNAL. Progress has taken place in practically all the details, and parts are being produced that function with greater reliability, while at the same time they are light in weight.

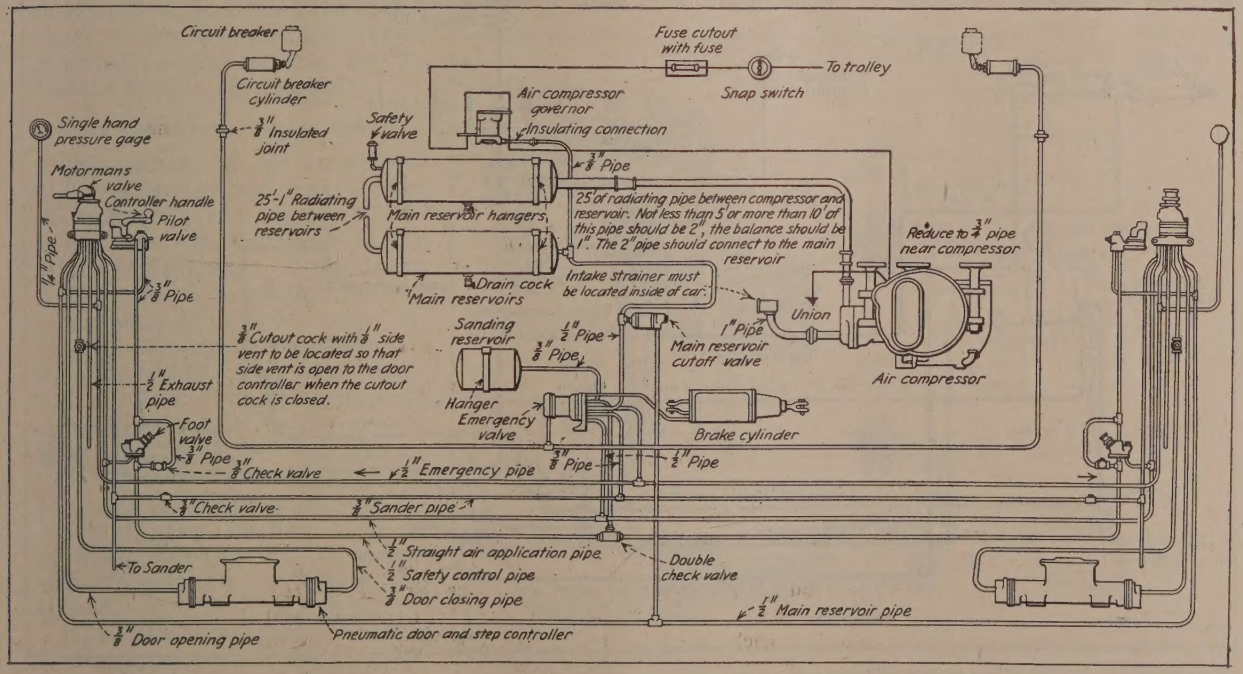
AIR BRAKES REDESIGNED FOR NEWER CONDITIONS

The development of air brakes and the urge for refinement in the performance of the brake itself and its related apparatus is attributable directly to the ever-increasing necessity for maintaining maximum schedule speeds with a limited maximum speed, and also to the continually increasing requirement of obtaining maximum possible safety and smoothness in operation with the greatest possible degree of flexibility in performance. Successful operation of surface cars in modern traffic congestion while maintaining high scheduled speeds has been very largely dependent upon the development of the various parts constituting the air brake equipment so as to provide rapid retardation.

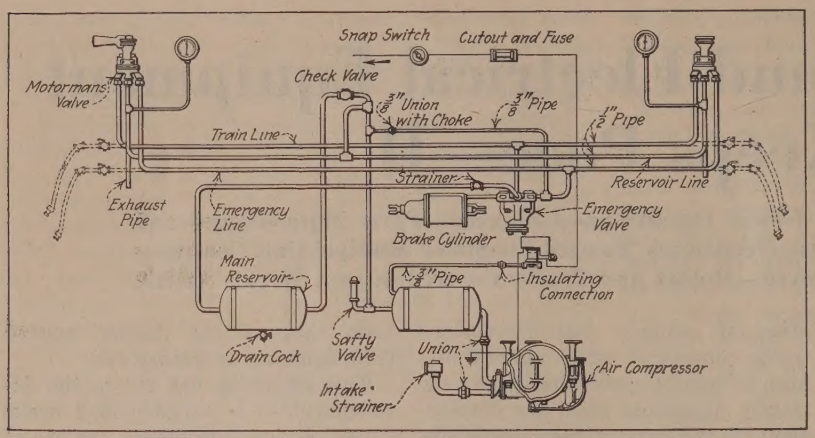
The development of light-weight cars has presented a difficult air-brake design problem which is due to the same conditions as the spring problem previously described. The relatively large ratio between live and dead load has meant a combination of conditions which could not be properly fulfilled without some additional modification in the brake performance. It became increasingly difficult to provide a braking ratio which would operate satisfactorily with an empty car and at the same time give the rate of retardation required properly to control a fully loaded car in congested districts. In the same way, if the brake was designed properly to handle the heavily loaded car, operation of an empty car was carried out with so high a ratio that serious danger existed from skidding on greasy rail.

This condition has led to the development of a variable load brake device, designed to permit the use of a braking effort which will be sufficient for the loaded car and yet to so control the pressure in the brake cylinder that this will be automatically adjusted as the live load on the car decreases. The adjustment effected by this device is accomplished through the movement of the body bolster relative to the truck transom as the load on the car is increased or decreased.

The mechanism consists of a simple rocker arm supported by a bracket from the body bolster so that it can make contact with a fixed point on the truck transom. A vertical movement of the body bolster produces a rotation of the rocker arm about its supporting bearing, and this motion is transmitted through a strut to a valve mechanism which really amounts to an adjustable limiting or reducing valve.



Piping Diagram for Standard Double-End Safety Equipment

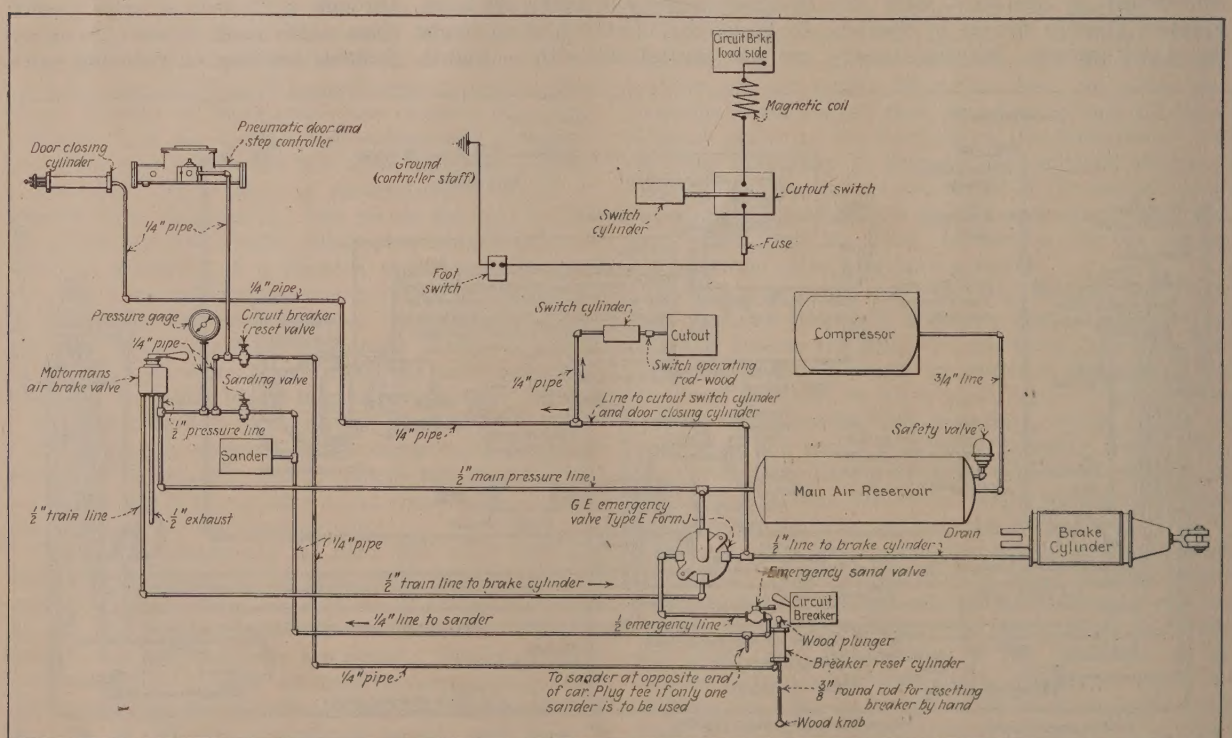


Piping for Straight Air-Brake Equipment with Sensitive Emergency Action

To prevent excessive wear between the bolster rocker arm and its point of contact on the transom, a small air cylinder is inserted in the strut in such a manner that the length of the latter is increased or decreased by the admission or release of air from this cylinder. Through the medium of door contacts and magnet valves, air is allowed to flow to this small cylinder when the doors are open and is released when the doors are closed. Consequently with the doors open the strut is considerably longer than when the doors are closed, and therefore the bolster bell-crank is allowed to remain in position to make contact with the transom member only during the period that the car doors remain open. The movement of the connecting strut caused by such contact is transmitted so as to adjust the setting of the limiting valve to prevent use of more than a predetermined brake cylinder pressure, corresponding to the existing load on the car. Consequently, each time the car is stopped and the doors are opened, the limiting mechanism is reset to take care of any change in the passenger load on the car, and the motorman is automatically prevented from using more than the proper brake cylinder pressure for making the next stop. This device has been applied to cars of the Eastern Massachusetts Street Railway and also in Brooklyn and Boston, and has been reported to accomplish the object sought in such a manner as to allow very much better braking performance than was possible before, under the wide range of car loads encountered.

An additional problem connected with the design of air-brake equipment has been presented by the use of two-car train units on many properties. The advantages of the straight air-brake equipment from the standpoint of simplicity and low cost made this form of equipment very desirable for use on trains of this type, particularly since it also represents the proper equipment for operation of the cars singly. To provide safety in the operation of such trains, some form of emergency mechanism was required in order that a parted train or burst air hose would produce an automatic brake application.

In the earlier equipment designed for this purpose, the emergency valve was arranged so that the emergency line also served as the supply line. Consequently, in order to permit a sufficiently rapid service application of the brakes to be made, it was necessary to increase the size of the by-pass port in the emergency valve to a point where the



Type of Safety Control Developed for Tri-City Railway for Single-End Equipment

desired sensitiveness in operation of the valve was difficult to obtain. This was particularly true in attempting to obtain emergency application of air from the motorman's brake valve.

This form of apparatus has been improved by taking air for the service application of the brakes from an individual supply line leading from the reservoir, and consequently the speed of brake application can be made as rapid as the size of the supply line and the port in the brake valve will permit.

The by-pass port, which regulates the functioning of the emergency valve for a given pressure reduction in the emergency line, may therefore be made as small as desirable. Hence, positive emergency action on both cars in a two-car train is insured when the motorman's brake valve is moved to an emergency position, or when the emergency pipe pressure is reduced suddenly by any other means, such as the opening of a conductor valve, the bursting of an air hose, or the parting of a train.

Thus, we find air-brake equipment undergoing in various ways development for the purpose of making it more suitable to the particular type of service in which it is to be utilized. One outstanding characteristic of the service requirement of traction brakes is that this service involves very frequent applications of the brakes, and these applications must usually be made as rapidly as possible. The entire design of apparatus and the various pneumatic devices utilized are influenced by this requirement.

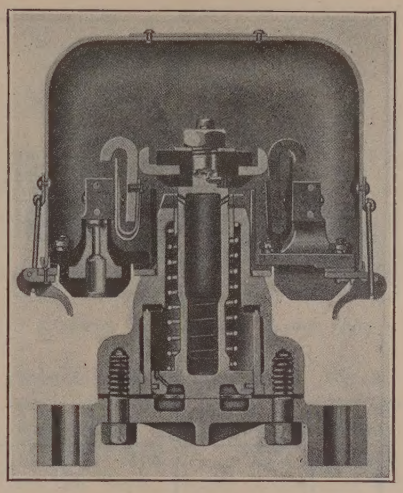
THE AIR BRAKE COMPONENTS

The modern car air compressor is a very efficient and rugged piece of mechanism, and recent developments have consisted more in the nature of refinement in the design of parts and an increasing vigilance in manufacture to insure proper fitting and alignment of parts than in any outstanding change in the function of parts. The primary developments have been in the manner of driving from the motor element to the compressor element and the design of the complete assembly for mounting under low-floor cars. In addition, simplification in suspension arrangements has been accomplished.

It may also be said that refinements in design for the purpose of reducing vibration have made possible the utilization of higher speeds with considerable savings in size and weights.

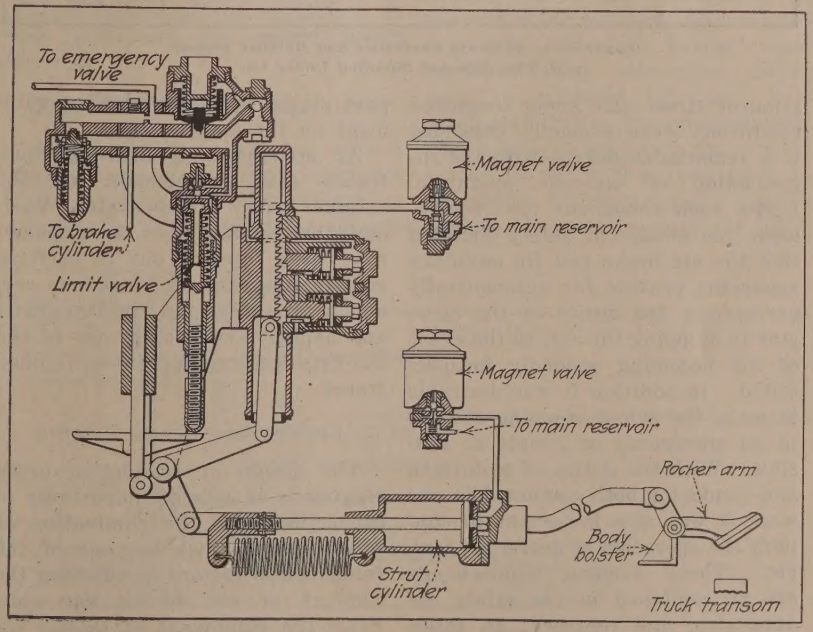
The brake cylinder, which is a comparatively simple piece of mechanism, is nevertheless the very heart of the brake system, and it has always presented the problem of providing proper lubrication and insuring against leakage. Many different types of rings and packing have been designed for the purpose of overcoming the tendency of the oil used for lubrication to leech out the filler in the ordinary type of leather packing. A considerable advance has recently been made in the development of a packing ring made of a composition material which is reported not to deteriorate in oil.

In considering the future development of air-brake equipment, the advantages of the utilization of higher-grade materials and lightweight alloys apply in the same way that has been described for the other parts of the mechanical and electrical equipment on cars. This development, as applied to air-brake parts, is limited by the operating economies which may be expected to justify the increased manufacturing costs entailed. This is particularly true of the compressor equipment. As applied to the fittings and other pneumatic devices incorporated in the air-brake equipment, the limit to reduction in size of parts, particularly the housing castings, is fixed by the necessity for maintaining a sufficiently large body of metal to withstand the strains imposed during assembling, and also to protect the actual operating parts from abuse during both assembly and subsequent maintenance in service. The requirement for what may at first appear to be an excessive amount of metal in some pneumatic device castings is entirely a matter of this mechanical protection to the operating parts, and is entirely distinct from any consideration of the actual air pressure to which the part is subjected. For this reason possible development in the application of pressings or lighter castings of higher-grade materials is largely limited.

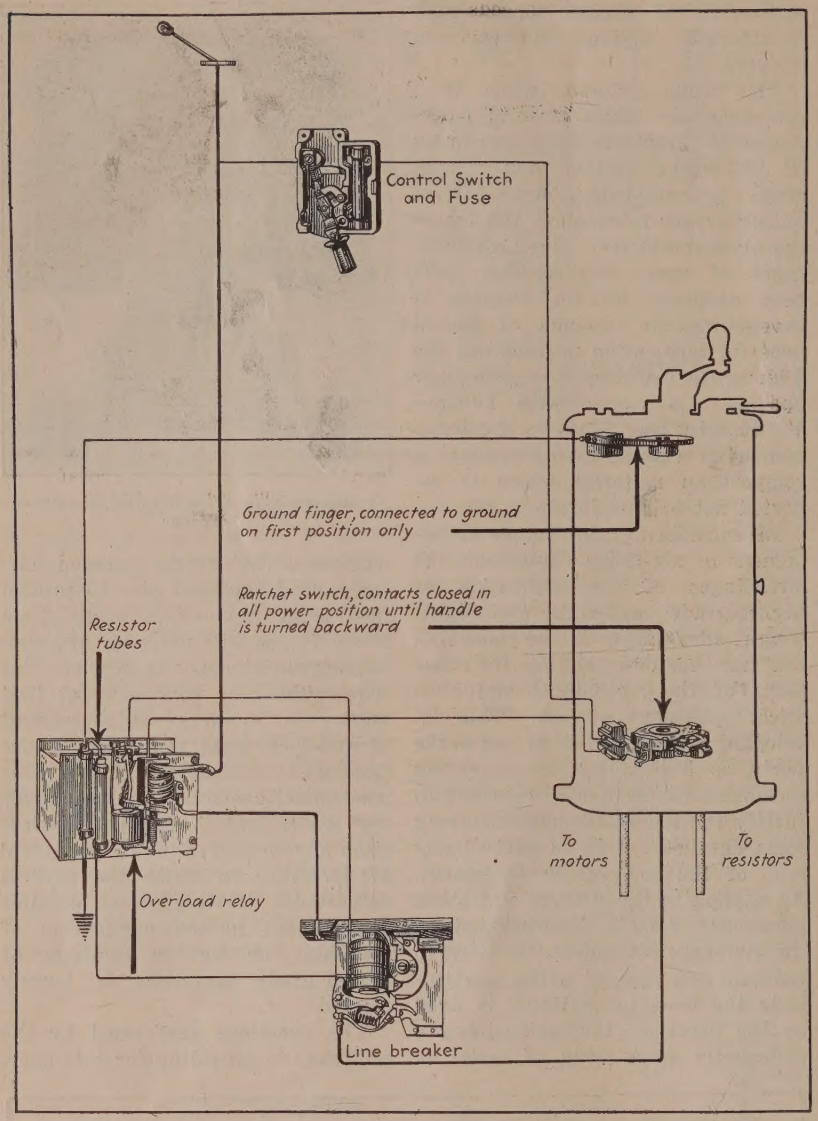


A Modern Type of Mechanical Air-Brake Governor

The functions performed by the air brake in providing for safe oper-



This Variable Load Device Adjusts the Braking Effort to the Weight of Passengers


Control Switch and Fuse
Ground finger, connected to ground on first position only
Ratchet switch, contacts closed in all power position until handle is turned backward
Resistor tubes
To motors
To resistors
Overload relay
Line breaker

Connections of Drum Controller and Ratchet Switch with Line Breaker Mounted Under Car

ation of street cars under congested conditions were suddenly expanded to a remarkable degree with the introduction of one-man operation. Under such conditions the requirement for maximum safety dictated that the air brake and its auxiliary apparatus provide for automatically performing the duties of the operator in stopping the car, in the event of his becoming suddenly incapacitated. In addition it was desirable to make the act of stopping the car in an emergency as simple as possible. With the duties of motorman and conductor both combined in one man, it was also important to simplify the operation of doors, sanders, etc. These various requirements are all combined in the safety car apparatus, and represent an interesting example of the important part played by the air-brake equipment on the modern car.

An accompanying drawing illustrates the arrangement of the original safety car apparatus. Various other combinations of equipment have been brought out to perform similar functions on a one-man car, and a type developed in Davenport and applied to one-man cars of the Tri-City Railway and others is illustrated.

Foundation Brake Rigging

The design of foundation brake rigging is of extreme importance in connection with the elimination of rough stops, which are one of the fundamental factors in affecting the comfort of an electric car ride. From the standpoint of safety, the design of foundation rigging is of paramount importance. There has been an increasing appreciation on the part of car designers of the importance of devoting proper attention to the layout of brake rigging in order to obtain smooth and equalized application of the shoes to the wheel. This has been partly discussed under the subject of truck design. In the design of the foundation rigging on the body, the increasing tendency to use boxed-over jaws and safety stops to insure obtaining a brake on at least one truck in the event of a pull rod failure is a step in the right direction.

There has also been increasing attention given to the matter of holding down the maximum allowable total leverage ratio, so as to prevent obtaining excessive piston travel as the result of body center bearing wear, play in the axle journals, or any movement of the truck element relative to the body, when the brake is applied. A total ratio not exceeding 12 to 1 is now considered the maximum allowable for good practice, and this ratio should be decreased if there is a possibility of obtaining any appreciable slack in the rigging when the brakes are applied.

The hand-brake equipment on electric cars should be installed so as to be operative at all times. There is a tendency to use various forms of helical quick-take-up castings in connection with the hand-brake rigging for the purpose of taking up slack chains rapidly. It is considered good practice to use either this form of quick-take-up or some type of gearing to insure against serious decrease in the effectiveness of the hand brake, when a chain length greater than 24 in. is required in the leverage layout. Where a quick-take-up casting is used, it has also been found necessary to guard against obtaining excessively short piston travel, as this will result in the brake application being made with the chain on the large part of the take-up cam and a consequent serious loss in the effectiveness of the hand brake. It is also considered good practice, as a safety precaution, in the design of hand-brake rigging to insure a hand-brake application developing forces in all brake levers in the same direction as are developed by the application of the air brake.

There have been considerable advances made recently in the design

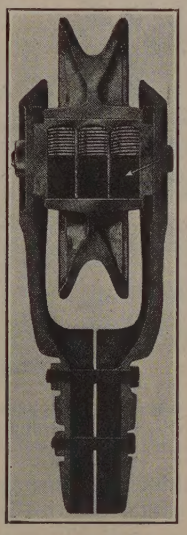
of control equipment. The most outstanding of these developments has been the successful design of multiple-unit control for operation on light-weight city cars, by a general simplification, reduction in size and weight, and improved arrangement to afford readier accessibility of the parts for maintenance. This development has taken place as the result of an increasing use of multiple-car trains in city service, and a desire by some operating companies to provide maximum flexibility in the use of cars by arranging each for independent operation.

For single-car operation there has also been a considerable tendency toward the removal of the customary platform circuit breaker and the installation of some form of line switch under the car. This practice may be attributed to the almost universal elimination of the bulkhead in car body construction, which makes the presence of the common type of platform circuit breaker very undesirable.

The use of field control for motors in city service does not seem to be a favored practice, as its use involves slightly additional complication. For a combination of city and suburban running, however, this type of control is considered of substantial advantage.

The foot control equipment developed on the Third Avenue Railway in New York to give the car operator simultaneous control of both air-brake valve and car controller by the operation of a foot pedal is an interesting arrangement. This equipment has the advantage of allowing the car operator to have both hands free, but because the acceleration through the controller must be automatic, it has some limitations from the standpoint of flexibility in operation under congested city conditions. The six-motor train control developed in Pittsburgh is also an interesting departure. It was designed in order to carry a portion of the motor equipment necessary to propel a two-car train on the trailer. This construction has the advantage that the extra motor capacity necessary to haul the trailer is dropped when the trailer is disconnected from the train. The scheme was discussed in the Annual Convention Number last week.

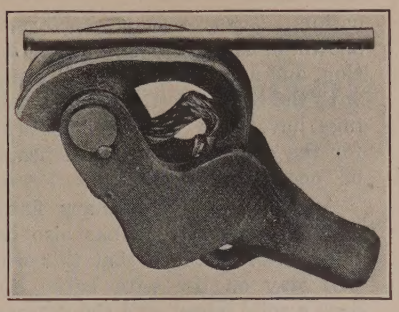
The desire to use multiple-unit control equipment on low-floor cars has also led to the development of this type of control in a form suitable to be installed in cabinets within the car body or under longitudinal seat boxes, where it is both protected and easy of access. In this construction, the arc-breaking switches are located under the platform of the car. In the general design of control apparatus there has been a tendency to provide greater arc-breaking capacity due to the fact that the railway power distribution systems have become such large networks with so much power capacity behind them that a failure of the equipment on any individual car causes severe arcing.



Graphite Plug Method of Lubrication for Trolley Wheel Bushings

Current Collecting Equipment

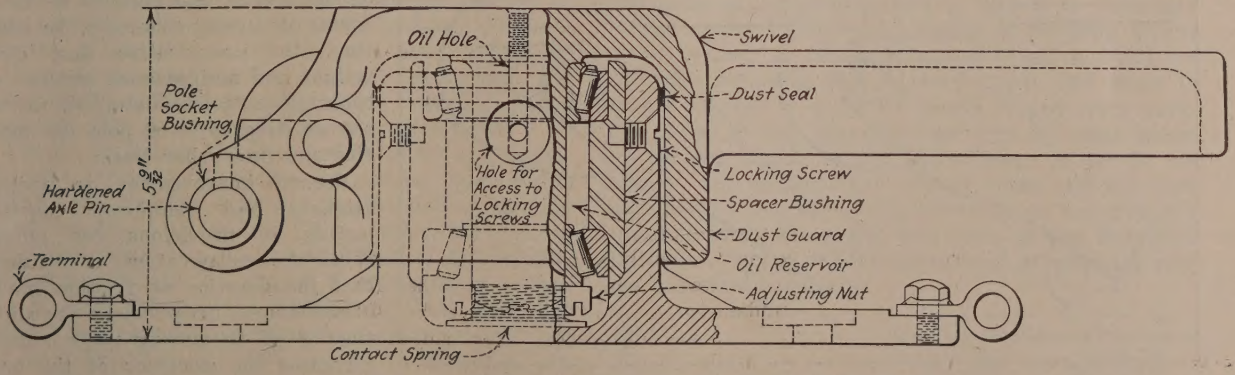
For some time there has been a feeling among railway operators that considerable improvement is possible in the design of the current collectors in common use. An attempt has been made to give the trolley wheel a longer life by increasing its diameter. This, however, has not been entirely successful because the increased weight at the end of the pole causes the wheel to jump farther away from the wire when passing under rigid overhead special work. Three diameters, 6 in., 5 in. and 4 in., seem now to be the most satisfactory sizes.



A Widely Used Type of Trolley Shoe

Damage to both wheel and wire results from excessive vibration with consequent arcing. Vibration, however, is largely a matter of balance and alignment, and improvement has been made in the balance of the wheel by means of greater care in the process of manufacture. A drop-forged copper trolley wheel is claimed in this respect to be superior to the ordinary cast wheel.

One of the outstanding problems in connection with the use of trolley wheels has been the lubrication of the bushing. In many cases the life of the wheel is determined by the life of the bushing. As a remedy for this difficulty, hollow, case-hardened steel, lubricated shafts, using a solidified lubricant, have given satisfaction on some railways. The lubricant inside of the bearing surface is fed to it automatically as required. Another remedy tried is the use of graphite plugs for lubri-



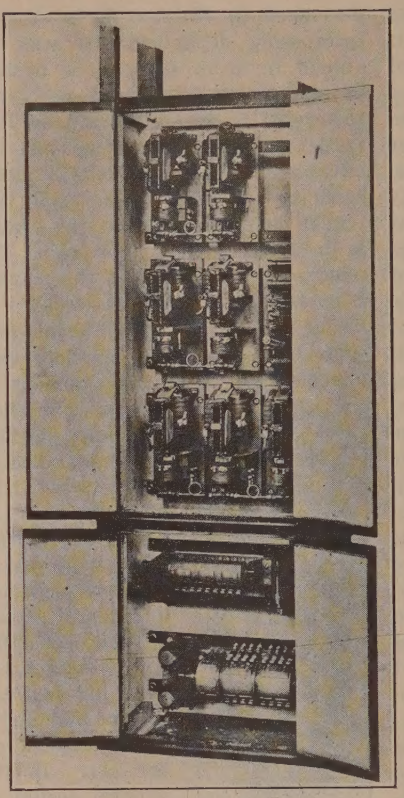
A Method of Application of Taper Roller Bearings to Trolley Base

cation. These rest on springs, as shown in an accompanying illustration, and are thereby kept in contact with the bearing. Conical side bearings have been used as substitutes for the ordinary cylindrical bearing on one type of wheel.

A wheel with stationary flanges and a rotating tread has also been tried. It is claimed that this wheel will stay on the wire better than does a solid wheel, and the decreased weight and cost of the moving part are additional advantages. It has not, however, been widely adopted.

Generally speaking, trolley wheel performance becomes increasingly unsatisfactory as the speed increases. The solution of this problem has been approached from two general angles, the first consisting of an attempt to improve the performance of the wheels by the methods already described, and the second, through the development of sliding collectors.

Such devices have as their object the maintenance of a larger area of contact and the elimination of vibration caused by the rotation of the wheel. The designers have had to contend with several requirements, among which the most important are reliable operation through special work, avoidance of excessive wear on trolley wire, and provision for backing. The last of these requirements has probably been the most difficult to meet, although certain types of shoes now on the market are reported to have been improved so as to overcome this difficulty. Some railways maintain that sliding contacts may be used without noticeable wear on the wire. Others consider that an important requirement for the satisfactory operation of sliding contacts is the proper lubrication of the wire. It is important in this connection that the proper kind of lubricant be used and also that it be applied properly. Frequent application of very small quantities of lubricant gives better results than the application of much larger quantities at longer intervals. The requirements for a proper lubricant include adhesiveness and a minimum content of saponifiable material to prevent washing off the wire.



Modern Light-Weight Multiple-Unit Control for Surface Cars Arranged for Installation in a Cabinet in Car Body or on Platform

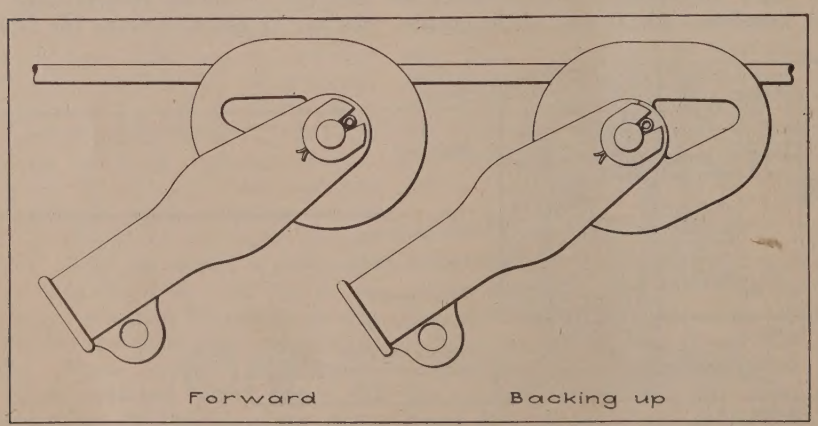
To insure that the trolley wheel will run true and also that there will be proper contact between the wheel and the wire, careful attention has been given to the design of the trolley base. The trolley pole should be free to move instantly in a vertical plane to accommodate changes in the height of wire, and should be equally free to swing in a horizontal plane to follow changes in wire alignment. A tapered roller bearing arrangement, shown in the accompanying illustration, has been designed for the purpose of obtaining better results in this direction.

In the equipment of one-man cars it has been a common practice to make the trolley base light in weight to correspond with the light weight of the other parts of the car. However, on one-man cars the service of the trolley base is even more severe than is ordinarily the case on cars of the larger types. Often the former is lower and therefore requires a longer trolley pole with a consequently greater tension. It is therefore the more general opinion now that the trolley base for both the small one-man cars and the larger cars have practically the same duties to perform and that there is no occasion for consideration of distinctive design.

A problem in trolley construction has been that of controlling the pressure on the wire as the pole changes its angularity for variations in the trolley wire height. Recent improvements in design have taken care of this requirement.

The trolley pole with either a wheel or shoe seems to represent the only practicable arrangement for current collection which will give satisfactory performance on the large majority of city and interurban properties which use overhead systems. This is primarily due to the nature of the existing overhead structure. The successful use of any form of pantograph or bow requires the equivalent of a catenary type overhead construction because of the inertia and rigidity of these forms of current collectors. In addition, the comparative first cost, weight and maintenance expense of the various devices materially favors the existing type of pole for most city and interurban lines.

Recent improvement in trolley catchers and retrievers consists mainly in provisions for oiling. While the trolley catcher is so simple that the question of friction really is secondary, nevertheless the addition of oil to moving parts simply increases the efficiency of the unit and decreases the amount of wear.



A New Type of Sliding Trolley Shoe

A Review of New York's Transit Situation

Conditions Getting Worse Daily—Yearly Growth Is Almost as Great as Entire Traffic of Buffalo—Mayor's Plan Would Disrupt the Present Rapid Transit Lines —Municipal Operation Means Waste of Money

By LeRoy T. Harkness
Member New York Transit Commission

EVERY day and in every way transit conditions in New York City are getting worse and worse.

Every day, on the average, there are 2,500 more travelers than there were the day before. Last year about 150,000,000 more rides were taken than were taken the year before. This means that an increase as large as the total traveling public of Rochester, Syracuse and Utica combined—156,488,293—is poured into our street railways every year.

These figures are so staggering we cannot fully grasp them. One hundred and fifty million is a big figure, but how big is it? By comparison it shows that the annual increase in New York is about three times the total yearly passengers in Albany (53,562,883), and approaches the total traffic in Buffalo (215,529,528).

In 1900 the first subway, costing about $50,000,000, was started, and put in partial operation in 1904. Nearly ten years were allowed to elapse before the Dual Subway plan of 1913 was put into effect, costing for construction and equipment about half a billion dollars. That project has been completed except for the Nassau Street line and the Fourteenth Street-Eastern line, both of which have been held up by adverse action of the Board of Estimate and Apportionment.

Again ten years have elapsed before the starting of new subways. We are continually making the same mistake of building a subway and then waiting till it is swamped before starting another. In the past fifty years traffic multiplied nearly forty times; facilities increased only about five and three-quarter times.

Finally, in August the Board of Estimate and Apportionment approved the routes and general plans of the Washington Heights extension in Manhattan and the Crosstown line in Brooklyn. The construction cost of these lines will be in the neighborhood of $60,000,000. This approval puts the Transit Commission in a position to drive forward the building of these lines, but unfortunately nearly five years must elapse before they can be constructed, equipped and put in operation. In May, 1922, the Transit Commission laid out a five-year building program to cost $218,000,000. This is the least that should be done.

The question immediately occurs, Where does all this tremendous traffic come from? Increases in population alone do not account for it. Traffic increases more than twice as fast as the population. It is the increase in population multiplied by the greater use people make of transit facilities.

The figures show this strikingly. The population of New York with number of revenue passengers on its urban transportation lines by twenty-year periods has been as shown in the table below.

It will be seen that in sixty years the traffic has multiplied about forty-five-fold, while the population has multiplied only five-fold. The population has grown from 18 to 39 per cent per decade and the traffic has increased from 49 per cent to 200 per cent, the high percentage following the opening of extensive new lines. In general, the population has been doubling about every thirty-three years and the traffic has been doubling about every twelve or fifteen years.

In 1860, on the average, each person rode forty-three times a year; in 1870 the average number of rides per capita increased to 103, in 1880 to 152, in 1890 to 218, in 1900 to 246, in 1910 to 321 and in 1920 to 404.

There must be considered too not only the increases in population and in the riding habit, but also the added difficulties of carrying people to and from congested districts. For example, the Equitable Building houses 13,000 people. It took a year and a half to build the Equitable Building, but it takes nearly five years to build a subway to carry its people to and from work. The 13,000 people, most of whom keep the same hours, are carried largely at the same time. A car in the subway will accommodate 130 of them and ten cars make up an express train, therefore it requires ten trains to carry the people who work in the Equitable Building. This is the full capacity of a two-track subway for twenty minutes.

Year	Population	Revenue Passengers
1860	1,174,779	50,830,178
1880	1,911,698	290,417,029
1900	3,437,202	846,353,058
1920	5,620,048	2,273,336,533

The Author Brings Out that in New York City:

7,500,000 people are transported daily!

More than 700,000 ride in one direction in one hour!

Every day 2,500 more rides are taken than were taken the day before; 100,000 more a week; 150,000,000 more a year!

In general, population doubles every thirty-three years; traffic every twelve to fifteen years!

Last year the total traffic was 2,590,313,699!

In 1860 each person traveled forty-three times per year; in 1920 each person traveled 404 times!

In the past fifty years traffic multiplied nearly forty times; facilities increased only about five and three-quarter times!

In two years the ticket sales at Times Square Station increased 9,000,000!

The transit lines could carry 35,000,000 passengers in twenty-four hours—one-third the population of the United States! They actually carry 7,500,000 because most people travel in certain directions morning and evening!

Entering into New York City's transit problem is also the number of visitors and commuters that come into the city. It is estimated in a recent report made to the Transit Commission that this amounts to more than 500,000 people a day. Nelson P. Lewis, formerly chief engineer of the Board of Estimate and Apportionment and now associated with the City Plan Survey of New York, estimated that in 1920 in the so-called Metropolitan District there was a population of about 9,000,000. The detailed estimates of prospective increases have not been completed, but Mr. Lewis' preliminary figure for this district for 1960—thirty-seven years hence—is 20,000,000.

The magnitude of this suburban traffic—present and prospective—amply warrants the work already initiated by the Transit Commission looking to the provision of separate adequate facilities for it. Competent advice is to the effect that both the Grand Central and Pennsylvania Terminals will be outgrown within the next seven years.

The Flatbush Avenue Terminal of the Long Island Railroad—the terminal of heaviest traffic of any two-track railroad in the world, is already outgrown. More than 34,000,000 passengers a year go through it.

FIGURES ON FUTURE TRAFFIC

We have considered the past growth. What of the future? In connection with various aspects of its work, the commission has had careful studies made of prospective traffic and has had the benefit of a careful survey made by the New York Telephone Company. These studies indicate a population of about 6,500,000 in 1927 and of more than 7,000,000 in 1932. Judging by the increases of the past the traffic in 1932 unless choked by lack of new facilities will be more than four billion passengers per year.

The traffic is already being choked. The 16,000 taxicabs that are crowding the streets and throttling surface traffic are an indication of the overflow from the transit lines of a considerable part of the public that would rather pay more and avoid the crowding.

Traffic congestion, especially on the rapid transit lines, has long passed the point of acute suffering. There is not only the physical suffering and menace to health, but the indiscriminate crowding of women and young girls on the transit lines in the rush hours is debasing and demoralizing. The whole situation is a disgrace to the city of New York.

At best it will take nearly five years before big trunk line subway systems can be placed in operation. The two lines—the Washington Heights extension and the Crosstown line—that the commission finally secured authorization to go ahead with a few weeks ago are only a beginning. They will only very partially keep up with the increased congestion. It is almost frightening to contemplate what must happen in the next four or five years before any major relief can be given. It is all very well to talk about traffic being reduced because of the choking effect of congestion. People, and more and more people, will try to crowd themselves on the transit lines. At the present time railroad operation in Greater New York is the most intensive operation anywhere in the world. Comparatively little can be done to add to the service that is being given. Tracks in the rush hours are crowded very nearly, if not quite, up to the limit.

These are some of the things that may help, although it must be recognized that anything but major subway construction is merely a palliative:

The engineers of the Transit Commission are already preparing plans for the lengthening of local station platforms both on the Interborough and B.-M. T. Lines. This will substantially increase the local service, and as the congestion gets worse more people may be content to take a little longer time and ride on local trains, thereby relieving the worst crowding, which is on the express trains.

Both subway companies have been ordered to buy more equipment, and large additional orders will probably be placed in the near future. The Interborough company claims that it has been prevented from keeping the present equipment in first rate order and from getting more cars because of the alleged failure of the city authorities to carry out the contract obligation to provide inspection, storage and repair facilities.

Ten years ago the city agreed to build the Nassau Street line, extending from a connection with the Center Street loop at Chambers Street down Nassau and Broad Streets to the Montague Street tunnel. Construction plans, specifications and contracts were prepared by the Transit Commission at large expense for this work, only to have them rejected by the Board of Estimate and Apportionment. The construction of this line would give very material relief to the whole Brooklyn transit operation.

Similarly in 1913 the city agreed to build the Fourteenth Street-Eastern line, extending from Fourteenth Street and Broadway to East New York, and the work on the subway portion was actually started in 1916. When the commission came into office the subway work was largely completed, but it was only after many months that it was able to secure authorization for the contracts for station finish and trackwork. Nor is this all. The subway portion of the line only goes a short distance in Brooklyn and will serve a comparatively limited population. The great service of this line is to reach the population further out toward East New York and the districts beyond East New York served by existing elevated railroads. At the present time these people are being brought by a roundabout way over the Williamsburg Bridge and down through the Center Street loop, where they must change and walk two blocks—most of them on the street surface in all sorts of weather—to reach the Broadway subway. It is without exception the most acute and potentially dangerous situation on any of the transit lines.

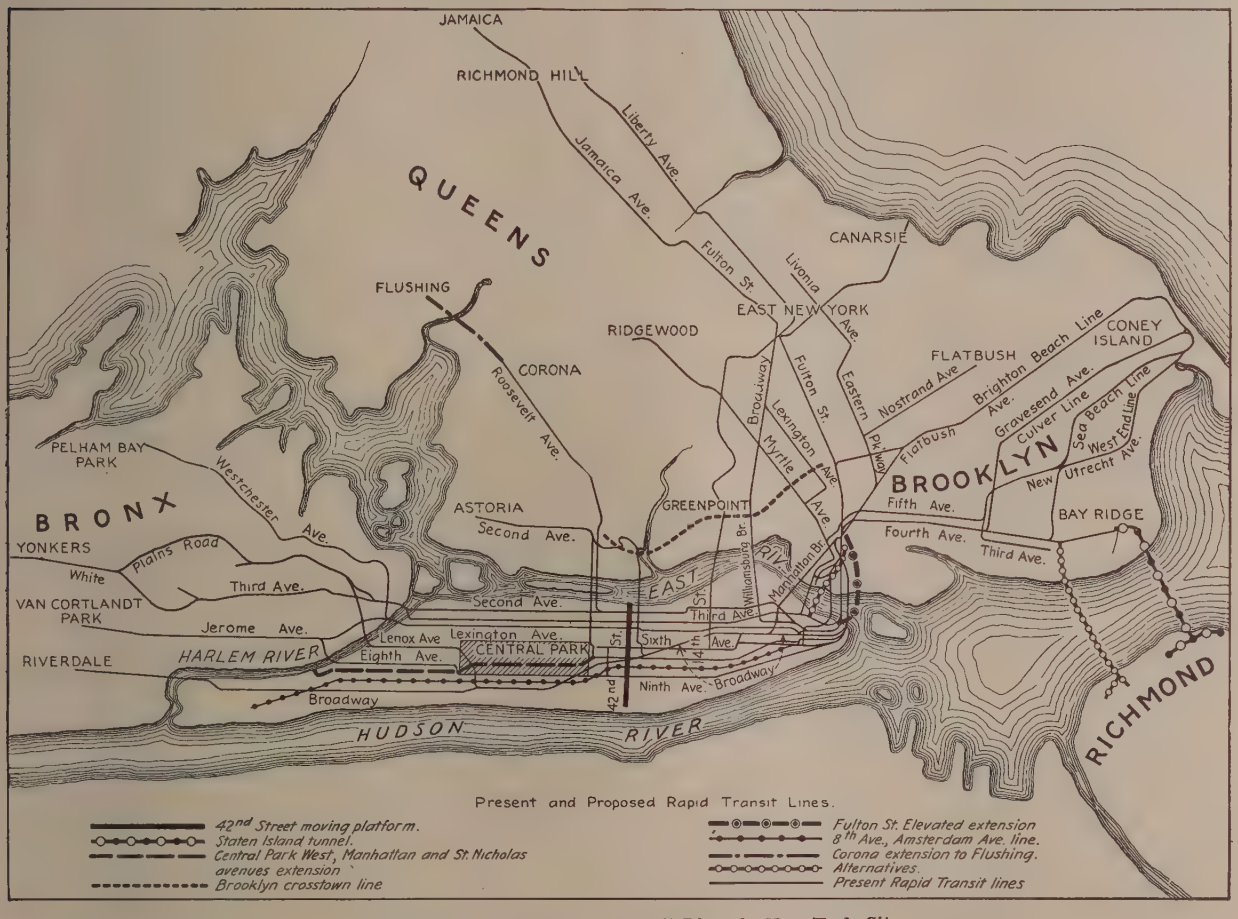
The completion of the Fourteenth Street line from East New York will take these people on practically an air route to Fourteenth Street and Broadway, where most of them will be within easy walking distance of where they want to go. The operating contract and the route and general plan which have previously been approved by the present Board of Estimate and Apportionment and the Mayor call for an elevated railroad, practically all of which is over an old right-of-way of the Long Island Railroad on which freight trains are now being operated. The Transit Commission rushed forward plans for this elevated extension in accordance with the provisions of the contract with the operating company, secured bids and submitted them to the Board of Estimate and Apportionment about a year and a half ago. That board rejected the bids on the ground that although the city was bound by a contract to build this elevated line the board now preferred a subway. The operating company, on the other hand, stated that the substitution would mean several years more delay and a continuance of the acute condition at Canal Street and insisted upon a compliance with the terms of its con-

tract. The matter has therefore stayed at a deadlock and the commission has been unable to get this line under way. It could be built in about eighteen months, would relieve the most acute condition in the city and would give the greatest single measure of relief that could be given anywhere within so short a time.

But it would seem that all these things, important as they are, will fall far short of relieving a situation that is bound to grow worse until the new subways come in. There is one method that is drastic, but in my judgment will very likely have to be availed of. That is what is called "staggering the peak," or, in other words, regulating the hours at which people go to and come from business. At the present time the bulk of the traffic is compressed within two hours morning and evening, 700,000 passengers being carried in one direction in one hour. Great relief can be occasioned if by statutory enactment or otherwise it were required that people in certain businesses should start and leave half an hour later or half an hour earlier, as the case might be. This would spread the peak over three hours instead of two, greatly reduce the crowding and at the same time permit carrying a greater traffic. The difficulty is to get the public to do this voluntarily. Such a system was put in operation during the influenza epidemic under plenary Health Department authority. It worked well then. I think we will have to resort to it again.

There are two main things to be done, and fortunately on these the ground work is well advanced. The first is the reorganization, combination and rehabilitation of existing lines, so as to enable them to give the maximum of service. The commission's plan for readjustment of the existing conditions has been made public* so need not be repeated here.

The Interborough company has already been reorganized and saved from a receivership. The old B. R. T. (now the B.-M. T.) after several years in the hands of a receiver has recently been reorganized and put in solvent condition. The plan and scope of these intermediate reorganizations were largely influenced by the Transit Commission working in close co-operation with Judge Julius M. Mayer of the United States Circuit Court of Appeals. Hence, both companies are now so organized that the Transit Commission's plan for the municipal ownership and unification of all the useful properties in the city can be carried out.



Present and Proposed Rapid Transit Lines in New York City

There is one vital point that must be kept in mind in all subway discussions and which is the base of the commission's reorganization plan: The state Constitution limits a city's borrowing power to 10 per cent of its assessed valuations. New York city is always nearly, if not quite, up to that limit. There are certain exceptions to this constitutional provision, notably the one affecting subway bonds. Subway borrowings may be exempted from the debt limit if the bonds are self-sustaining. The first subway built in 1900-1908 is self-sustaining and nearly $50,000,000 expended on it was exempted and used over again. The 1913 transit program, in which the city has invested nearly $250,000,000, is not self-sustaining and the money invested rep-

*See ELECTRIC RAILWAY JOURNAL, Oct. 1, 1921, page 557.

resents a frozen credit. Over $10,000,000 a year for interest and sinking fund payments are now included on this account in the tax budget. The crux of the commission's plan is to make the transit lines at all times self-sustaining so that nearly $250,000,000 can be released for new subways. This will constitute a revolving fund and will finance more or less automatically all needed future extensions. It will allow what we have long so badly needed—a consistent, continued building policy of putting forty or fifty million dollars' worth of construction under contract every year.

Furthermore, and in passing, one myth ought to be disposed of—that of the 5-cent fare. We have not in reality a 5-cent fare in New York today; it is 6 cents. The abolition of free transfers during the disintegration of the surface lines has added just about 1 cent to the fares paid by the riders on those lines through either an added fare or a 2-cent charge for transfers. On the rapid transit lines the passenger pays 5 cents and the city pays 1 cent out of taxes. The 5-cent fare has not been saved—it has merely been camouflaged. The Transit Commission reorganization plan is the only constructive suggestion yet made for its restoration.

New Subways the Only Solution

With regard to new subways:

The only solution of the problem is the building of new subways on an enormous scale. More than a year ago the Transit Commission outlined a plan that would take five years to carry out at a cost of $218,000,000. Seven lines in all were proposed.

After the Transit Commission had adopted these plans the Mayor of the city made public a so-called subway plan extending over a period of fifteen years. This included a description of various map or paper routes all over the city and called for the recaption of the lines built by the city under the 1913 subway program and leased to the Interborough and B.-M. T. companies, the contracts providing that those lines could be taken back at any time after ten years upon the city paying the companies the amounts of their investment plus 15 per cent.

The Mayor's plan called for an expenditure of more than a billion dollars, but without the slightest trace of any plan for financing the cost. Furthermore, the layout of the lines violated fundamental rules of engineering and in the face of the need for utilizing every available agency to meet the enormous increases of traffic the Mayor urged a plan that would split apart and disintegrate the present system.

The Board of Estimate and Apportionment turned down the commission's subway plan without ever officially giving a reason. Thereafter, and for a number of months, the attention of the city board and certainly that of the Mayor was concentrated on attempting to get legislation abolishing the Transit Commission, turning all the powers of the commission, including that of regulating service, rates and capitalization of transit companies, over to a city board and giving the city the power to engage in municipal operation of all transit facilities. As soon as the Legislature adjourned the commission, in a final effort to secure action, slightly modified two of its routes—the Washington Heights extension and the Crosstown line—to agree as nearly as might be with two of the Mayor's routes. After repeated requests the Board of Estimate finally appointed a conference committee, presided over by Dock Commissioner John H. Delaney, who had been Transit Construction Commissioner and thereby had a thorough knowledge of transit matters. The conference finally led to the approval of these two routes and the commission is now in position to drive forward the construction plans, contracts and specifications, and as soon as completed to submit them to the Board of Estimate for the necessary consents and appropriations.

Mayor's Plan Means Disintegration

The Mayor's plan, or, more properly, the theory underlying it, requires more extended consideration. The paper maps or routes included in it are of themselves relatively unimportant except as they are founded upon the principle of disintegration. One route or another, if based on fundamental engineering considerations, should readily be adjusted with another route or routes. The Mayor, however, proposes in the first place to recapture such of the existing lines as are recapturable. By reception is meant the right retained in the 1913 subway contracts for the city to take back the new lines at any time after ten years by paying an amount which at the tenth year equals the company's investment plus 15 per cent and decreases by 1/39 part each year thereafter. But only part of the existing rapid transit system—to say nothing of the surface lines—is subject to this right. The first subway built under the 1900-1902 contracts is not subject to it. Neither is the Manhattan Elevated system nor the company-owned elevated and rapid transit lines in Brooklyn.

This would be the result of the adoption of such a policy and it needs to be carefully considered by the citizens of New York because all signs point to a determined effort on the part of the present city administration to carry it out.

In the first place it would cost something over $180,000,000 in payments to the Interborough and B.-M. T. under the terms of the contracts. This would be an actual cash outlay out of the city treasury and would not add a single seat nor a single strap.

So much for that. Now to consider the disintegrating effect:

In 1913 the city extended the old subway line on the east side of Manhattan south of Forty-second Street north into the Bronx by building the Lexington Avenue extension. Similarly, on the west side it extended the old Broadway line south of Times Square to downtown Manhattan and Brooklyn by building the Seventh Avenue extension. The subway contracts provide for "swapping" one of these new extensions for one of the old lines. That would mean that transfers or connections from one line to the other would be cut off. This would also do away, in large part at least, with the joint service in the Bronx whereby Manhattan Elevated trains operate over the subway extensions.

In Brooklyn a great part of the transit relief under the 1913 program was furnished by linking up new subway lines with existing lines such as the Brighton Beach and Sea Beach lines already owned by the Brooklyn company. The city cannot recapture these old company lines and the reception of the new lines would mean the breaking apart of the present joint operation. Thousands of passengers coming in over the Brighton Beach line would have to transfer at Malbone Street in Flatbush and pay an additional fare to go over the Broadway line. A similar situation would be the case with the Sea Beach service at about Fourth Avenue and Sixty-fifth Street. So also the tremendous traffic coming in over the Broadway Elevated in Brooklyn would be deprived of the present free transfer to the Broadway subway in Manhattan.

The purpose of this part of the so-called plan is not to give transit relief, because it will not give transit relief. Reception of the existing lines in and of itself will not add a single new facility, but on the contrary will disintegrate and interrupt the existing avenues of traffic and multiply the number of additional 5-cent fares. The underlying purpose patently is to get possession of a part of the rapid transit system so that it can be municipally operated.

Expressing it briefly, the difference between the Transit Commission's plan and that of the Mayor is:

The commission believes in eliminating existing abuses of private operation, reorganizing, combining and rehabilitating present lines and utilizing every available agency to meet the present traffic congestion and the enormous increases that are indicated for the future. The Mayor's plan is bent upon splitting apart the existing lines and entering upon the field of municipal operation on part of those lines even though that spells disintegration and additional fares.

The commission laid out a conservative plan for the expenditure of $218,000,000 in five years, and provided the way, through its reorganization plan and the exemption from the debt limit of the present investment, for adequately financing this project and all future ones. According to his estimates the Mayor's plan calls for the expenditure of about $900,000,000 for construction over a fifteen-year period. Estimates of the commission's engineers—the men who have actually built the New York subways—show that the bare construction cost would be at least $1,150,000,000. With municipal operation the city would have to spend scores of millions of dollars for equipment for these new lines. No provision has been made in the estimates for this. In addition the Mayor's plan contemplates paying out of the city treasury to the transit companies for reception an amount in the neighborhood of $180,000,000. If it were possible to carry all this out in toto it would probably entail an expenditure in the neighborhood of a billion and a half dollars. To provide for this absolutely unparalleled expenditure there is no financial plan except as the city administration might expect to fall back upon the ordinary annual accretions to the debt limit. As a matter of fact these are altogether insufficient to meet either the commission's or the Mayor's subway projects, and are practically taken up by the normal increases in city functions such as schools, streets, paving, sewers, and the like.

Recently, the Comptroller officially reported the present debt limit to be about $76,000,000. This, however, did not take into consideration $60,000,000 for the Staten Island tunnel or the cost of various other projects.

Proposed Staten Island Tunnel a Waste of Money

Before leaving subway matters, there is one instance of the city's activities that I cannot forbear referring to. Under a separate act of the Legislature passed in 1921 the Board of Estimate has gone ahead with a project to build a tunnel to Staten Island. This is laid out as a combination freight and passenger tunnel, and in this respect it conflicts both with the plans of the Port Authority and of the Transit Commission. The Board of Estimate and Apportionment is already letting contracts for this work, and the cost is estimated at $60,000,000. It does not fit into the complete scheme outlined by the Port Authority for freight development and as laid out would only connect for freight purposes with the Baltimore & Ohio Railroad. No contracts have been let for this operation and so far as freight is concerned if and when the tunnel is completed the city will practically be at the mercy of the railroad companies in fixing the terms of the lease. So far as transit operation is concerned this tunnel is a complete misfit. To allow for freight operation the grades of a tunnel have to be in the neighborhood of 1 per cent, while for transit operation they may be in the neighborhood of 3 per cent. Stated concretely, this means that the present tunnel has to be so deep at the shore line of Staten Island that access to it can be only through deep elevators, and the railroad only rises to the surface away in the center of the island. Therefore it conflicts with well-considered plans both from the standpoint of freight and transit development.

The Transit Commission's plans for Staten Island contemplate a tunnel that would rise near the shore lines both of Staten Island and Brooklyn and readily connect with existing lines in both boroughs. The city, however, is committed to going ahead and spending $60,000,000 on this project. For this amount of money the Transit Commission could not only provide a proper and adequate rapid transit tunnel to Staten Island but could revamp and rebuild the existing transit lines within that borough so as to give the whole island as good transit service as there is in the city. The spending of $60,000,000 or more on this ill-conceived project represents to my mind the grossest waste of public funds that I have seen in an experience of over twenty years in municipal affairs.

> "ALL the studies made by the commission indicate that in congested districts street cars are more effective in moving large numbers of people than are buses when consideration is given to variations in weather and other conditions. The proper field for buses is to take the place of some of the trolley lines outside the congested areas and generally to serve the outlying districts as feeders for rapid transit and other lines."—*Commissioner Harkness.*

Present Buses Not Municipally Owned

Finally, with regard to surface lines and buses:

It has been popular in certain quarters to refer to the surface systems as antiquated and obsolete. The truth of the matter is that they carry about 40 per cent of the travel of the greater city, 57 per cent in Brooklyn, and large districts, especially in Brooklyn, are absolutely dependent on them.

New York has had for a number of years an exceedingly well-managed bus line operating on a 10-cent fare —that of the Fifth Avenue Coach Company. Several years ago, at the time of the Brooklyn transit strike, one of the city departments arranged as an emergency measure to put a number of buses in Brooklyn along the lines paralyzed by the strike. These were buses operated by individual owners and supervised by a city department. This marks the start of the so-called municipal operation of buses. After transit conditions returned more to normal, injunctions were obtained against the continued operation of these buses, and generally they were withdrawn from Brooklyn. During the early days of the receivership of the New York Railways the receiver discontinued operation on several crosstown lines, and these buses were put in to take their

places. They bear on their sides the words "Department of Plant and Structures," but in reality are not owned by the city, nor by that department, but are owned by individual operators.

At about the time of starting this bus operation the Board of Estimate and Apportionment passed a blanket resolution authorizing the Commissioner of the Department of Plant and Structures to grant permits to individual owners of buses. The city Charter lays down in detail the procedure that must be followed in granting rights to use city streets, and the public service commission law requires that in addition a certificate of convenience and necessity must be obtained from the Transit Commission. No attempt was made to comply with these statutory requirements, and in the litigation that ensued the Supreme Court of the state of New York repeatedly held this bus operation to be illegal.

> "FURTHERMORE, and in passing, one myth ought to be disposed of—that of the 5-cent fare. We have not in reality a 5-cent fare in New York today; it is 6 cents. The abolition of free transfers during the disintegration of the surface lines has added just about 1 cent to the fares paid by the riders on those lines through either an added fare or a 2-cent charge for transfers. On the rapid transit lines the passenger pays 5 cents and the city pays one cent out of taxes. The 5-cent fare has not been saved—it has merely been camouflaged. The Transit Commission reorganization plan is the only constructive suggestion yet made for its restoration."
>
> —*Commissioner Harkness.*

In the fall of last year the commission conducted an extensive investigation into this bus operation and found it honeycombed with politics and what a local politician once termed "honest graft." For example, permits were quite generally given on the recommendation of district leaders, bus drivers were laid off for not voting, and an old-time partner of the head of Tammany Hall known as "Fish-hooks" McCarthy was given bus permits on the Eighty-sixth Street "cream" line on a telephone request. On one of the lines in the Bronx it was proved beyond question that two local politicians were drawing down two-thirds of the profits on a line operating on a 15-cent fare, for which they had done nothing but obtain the permit. When these situations were called to the attention of the Commissioner of the Department of Plant and Structures, while on the stand before the commission, his answer was that he was not interested "so long as they were Democrats."

Finally a suit for injunction was started by one Schafer as a taxpayer based not on the illegality of the actions of individual bus operators but based upon the broad ground of the illegality of the action of public officials in authorizing and continuing this wildcat system. A decision in Schafer's favor was handed down by Justice Mullan in the Supreme Court last summer and the commission intervened and asked for and obtained a stay while it was investigating the matter. An appeal was taken to the Appellate Division, which affirmed the decision of the court below. Subsequently an application was made by the city authorities for leave to appeal to the Court of Appeals. This leave has recently been denied by that court, and it is this last decision that has brought the bus situation to a focus.

Immediately upon learning of the decision of the Court of Appeals the Mayor called a meeting of the Board of Estimate and Apportionment and resolutions were adopted asking the Governor to call an extraordinary session of the Legislature to authorize the city to spend $25,000,000 for buses and to engage in the business of municipal bus operation.

There has been no need for a special session. The matter of municipal bus operation is a large public question that should thoroughly be thrashed out and decided at a regular session. On the merits it is very simple and easy to hold the matter in abeyance until after the Legislature meets in regular session next January. All that is required is for the Board of Estimate to act in accordance with the provisions of the Charter and grant rights which will expire by their own time limit at the end of, say, six months. On the basis of such action the Transit Commission is prepared promptly to give its certificates of convenience and necessity. The grants by the Board of Estimate may be either to the individual bus operators or to associations of them, and they may contain such terms, conditions or requirements as that board sees fit to impose. One term it must impose under the Charter: That the bus operators shall pay compensation to the city. The Fifth Avenue Coach Company is required under its grants to pay the city 5 per cent of its gross receipts, which amounts to about $250,000 a year. Under the illegal operation that has been carried on the city has not received a cent, and in addition has spent considerable money for salaries of starters, superintendents and the like.

This very significant fact should be kept in mind: The demand for an extraordinary session on the so-called bus emergency is not for the purpose of maintaining the *status quo* or to keep the present small operators going. The demand is for authority to spend $25,000,000 of city money for buses and to engage in municipal bus operation. This does not mean a continuance of the present condition but a substitution for it. The present bus operators are to be put out of business and their places taken by municipal buses and municipal employees.

Bus Costs and Field Analyzed

It has been blithely assumed and promised that the $25,000,000 municipal bus system would pay on a 5-cent fare. So far as I have ever been able to ascertain no real study has been made by the proponents of the plan to find out if this is so. True, the present wild-cat bus operation is on a basis of a 5-cent fare, but in that case nothing is paid to the city and there are no maintenance and depreciation reserves, and the commission's counts indicate a degree of overcrowding and a condition of equipment that would not be tolerated in normal operation. On the contrary, the Fifth Avenue coaches are well run and the whole property is efficiently managed. The plain fact of the matter is that on a basis of efficiency and thorough maintenance and repair the cost of operation takes more than 8 cents out of every 10 cents collected by the Fifth Avenue Coach Company. Investigations conducted by recognized experts employed by the commission of conditions not only in New York but in other cities in this country and abroad indicate that in general 3½ miles is the maximum

distance that a bus can profitably be operated on a 5-cent fare.

Buses have their part in any modern transportation system and an important part. The trouble with the surface lines in New York in large part is due to their being throttled. To render good service and make money a surface car must move at a fair rate of speed. Broadway, for example, has the lowest mileage per hour of any surface system I know of—less than 5. The remedy for the present ills of surface transportation in New York are those indicated by the Transit Commission some time ago. It proposes to eliminate a considerable part of the present track mileage as being no longer necessary and to straighten and improve the existing routes. This would leave certain streets free for vehicular traffic and give the streets on which trolleys are retained the right of way for railroad purposes. The provision of additional streets wholly for vehicles would fill a great need. On the streets reserved for railroad purposes parking of cars should be prohibited at least during rush hours. By this means and through greater care in letting the cars through on cross streets the schedule speed should very materially be increased. This in turn would draw considerable traffic because if we could go uptown in a surface car at a reasonable rate of speed we would greatly prefer doing that to going down into a subway or climbing up onto an elevated.

All the studies made by the commission indicate that in congested districts street cars are more effective in moving large numbers of people than are buses when consideration is given to variations in weather and other conditions. The proper field for buses is to take the place of some of the trolley lines outside the congested areas and generally to serve the outlying districts as feeders for rapid transit and other lines.

Co-ordinated Train and Motor Bus Service in Boston

Owing to the Short Local Hauls and Congested Streets in Malden, the Boston Elevated Is Proposing to Operate Trolley Car Trains with Distributing Lines of Buses Instead of Individual Trolley Cars—If Successful, the Plan May Be Extended to Other Localities

By Edward Dana
General Manager Boston Elevated Railway

THE story of the motor bus as it is unfolding in the territory of the Boston Elevated Railway may be of interest generally.

On July 1, 1918, when the Commonwealth of Massachusetts assumed the direct operation of this large system, there were no competitive motor buses in the territory. This vehicle, which had insidiously worked its way across the continent from the California coast, leaving in its trail suffering street railway systems, had played no part in the difficulties which led to the public operation of the Boston Elevated.

Under the 1918 act, the Elevated was required to be operated on a service-at-cost basis and fares were increased. On July 10, 1919, a flat 10-cent fare had been reached. This flat fare was accompanied by a substantial decrease in revenue passengers, even though the fare was sufficient to prevent deficits and cover the full cost of service.

Naturally, there has been some discussion and advocacy of competitive buses, but the assessment against the taxpayers of $3,980,151.67 for the first year's deficit under public operation and the fact that this amount had to be repaid before fares could be decreased had a very real effect upon those in authority by whose action motor buses could be permitted.

The consequences of the act were understood by most municipal officers, and it was realized that if competitive motor buses were permitted and the revenue of this great system diminished one of three things must occur under the laws:

First, an increase in fare above 10 cents to offset the loss, or

Second, additional deficits against the taxpayers, or

Third, loss of service in the district affected, in an effort by the state trustees to localize the competition and place no burden upon the system as a whole which might result in a higher fare or a tax assessment.

The result was that cities and towns refused licenses to competitive jitneys with the single exception of the city of Malden. Here the indignation because of the 10-cent fare was apparently greatest and an appreciation of the economic requirements of the act was apparently the lowest.

In the light of what has occurred it almost seems as if Malden was destined to be the scene of the final solution of the problem both in Malden and in other cities outside of Boston served by the Elevated, to the end that it shall be satisfactory to all.

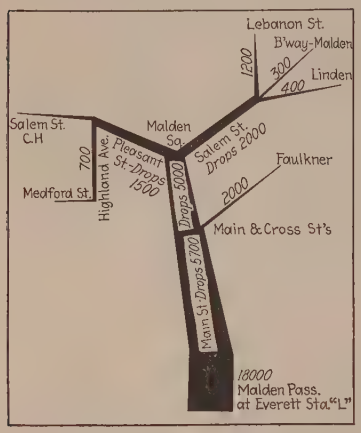
Competitive Buses in Malden

On June 18, 1919, competitive buses were authorized in Malden paralleling one of the main street railway lines. The state board operating the Elevated took no action, chiefly because as a state board, operating according to a specific act, it could not act from the same motives as a private railway. It was necessary to have an actual loss of revenue and a consequent burden to place upon the rest of the system before measures could be taken.

During this period it became a certainty that the 10-cent fare was sufficient to prevent any further deficit on the Elevated system, and it likewise became possible to work out a local fare of 5 cents for those whose rides were so short that they had ceased to ride and thus secure full enjoyment of the facilities of the system. As is now generally known, this has been accomplished,

so that now 100,000,000 passengers a year, representing 26 per cent of the total revenue, are carried for a 5-cent fare, and the average fare has been reduced to 8.7 cents.

By the irony of fate, the most ideal location to install this local fare zone scheme existed in Malden. Hence it was tried there without any intention of driving out the jitney, because it was evident that the frequency of the jitney service on a very short haul could not be combated by necessarily less frequent trolley service, whatever the fare.



Traffic Distributes Rapidly in Malden. It Is Logically a Bus Problem

Then followed an attempt covering many months to have the authorities and the car riders understand that there must ultimately be a choice between trolley and motor bus in any situation in which their competitive service resulted in loss of revenue.

After some feeling and a change in the Board of Aldermen by an election in which jitney competition was the chief issue, the approval of a license granted to the private jitney came before the Mayor for approval. The Mayor vetoed the license upon broad grounds, and very shortly thereafter two lines of motor vehicles were in operation by the Boston Elevated Railway as feeders. Apparently the present service has met requirements and has proved satisfactory to the traveling public.

At the present time the question of rebuilding the street in the heart of the city of Malden has brought up the desirability of removing the car tracks from an already overcrowded main business thoroughfare. The local authorities, the executive committee of the Chamber of Commerce and other substantial citizens intent on broad planning for the future have been in conference with the Elevated and appear to favor the plan which is here described.

The Malden Plan

The chart of the Malden lines shows that they converge through Malden Square and reach the Everett Terminal of the Elevated trains via Main Street.

The traffic flow chart also indicates the volume of traffic concerned. It is interesting to note that a daily load of 18,000 in each direction at the terminal in Everett is reduced at Malden Square to only 6,000. The distribution of these reduced numbers from Malden Square by several trolley lines to comparatively near-by territory is conducive to inefficient operation and lack of flexibility.

It is for this reason that consideration was given to a plan for the operation of trolley car trains from the Everett Terminal of the Elevated to a terminal at Malden Square and the distribution of the traffic at this point by means of several frequent bus lines to the originating and delivery territory of these car riders. The plan at present under consideration is shown in the accompanying diagram.

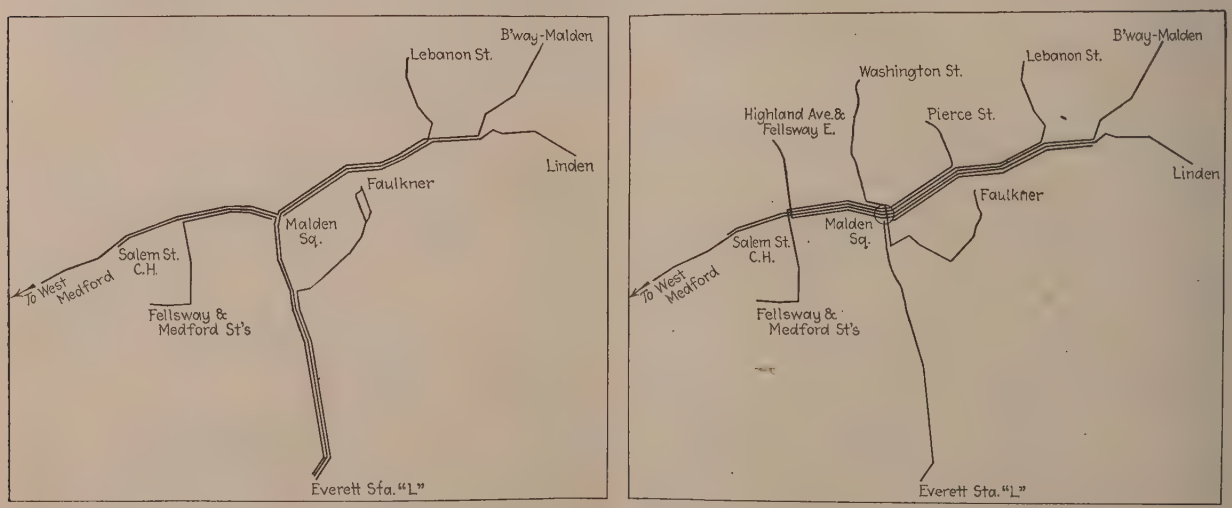
Theoretically, such a plan is fundamentally sound from several points of view. In the first place it permits by trolley trains the best possible service both as regards quantity and regularity where the traffic as indicated in the flow chart is the heaviest.

Secondly, it permits a convenient distribution of a relatively light traffic into the originating and delivery district of the rider by short, frequent bus lines.

It would appear, therefore, that at no greater cost to the car rider a much improved transportation service could be rendered and the abandonment of many trolley tracks would solve the street traffic congestion problem in the heart of the city.

The state board operating the Elevated has signified its readiness to proceed with such a plan. Whether it actually becomes an established fact in the near future will depend upon the degree of confidence which is accorded the plan by the community concerned.

Such a plan in successful operation would most certainly mark a step forward in the co-ordination of bus and trolley and be followed by similar arrangements elsewhere.



The Routes at the Left Show Present Car Lines—Those at the Right the Proposed Substitute, i. e., Train Line to Malden Square and Bus Service from that Point

What the 5-Cent Fare Means in Jersey

More than 150,000,000 Passengers in the Larger Municipalities Get Reduced Rate Under Public Service Railway's New Plan—Success Will Depend Upon Increased Traffic

A NICKEL fare on a new basis is in effect for local rides in the more populous communities of New Jersey, in accord with the schedule of rates put into effect on Oct. 1 by the Public Service Railway. The new fare is the result of a proposal made on Sept. 25 by the Board of Public Utility Commissioners, and accepted on Sept. 27 by the company, as told in ELECTRIC RAILWAY JOURNAL for Sept. 29. In general the plan embraces a 5-cent fare for any continuous ride within the city limits of Newark, Jersey City, Paterson, Elizabeth and Camden, with an additional 5-cent charge to the end of the previous single-fare limits. Beyond these the 8-cent fare continues in effect. No transfers are issued in the 5-cent areas.

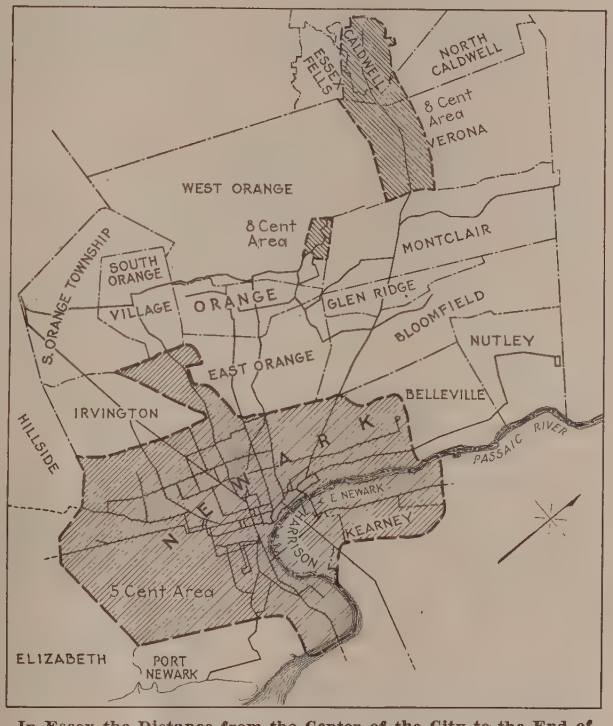
The inauguration of this plan in New Jersey makes the Public Service Railway the largest property, in point of mileage, now operating with a 5-cent base fare. The present arrangement is to be tried for four months unless sooner terminated by joint agreement between the company and the Utility Commission. How successful the scheme will be cannot be foretold with accuracy yet, although it is obvious that there must be a large increase in the number of short-haul passengers if the plan is to produce as much revenue as did the old fare. During the year 1922 the railway carried 325,000,000 passengers, of whom about half traveled in what are now the 5-cent areas. The new fare therefore means a reduced rate for more than 150,000,000 riders. Partly offsetting this decrease in revenue there will be the gain from those who travel to points outside the city boundaries and pay 10 cents instead of 8 cents.

EFFECT ON RAILWAY REVENUE CANNOT BE PREDICTED

Uncertainty concerning the outcome of the experiment is due chiefly to the presence of the hundreds of buses which operate on the same streets as the trolleys. In some cases they are giving a longer haul for 5 cents than the railway is doing under the new rate. But in other cases where the bus fare has always been more than a nickel, the trolley may henceforth have the advantage. There is also some question about the effect of the present routing, because buses in a number of instances make through trips which can be made on the trolley only by transferring.

Traffic conditions vary greatly in different parts of the state, due in part to local geographical features, and in part to the peculiarities of bus competition. The railway system is divided into six operating divisions, and the new plan has had to be adapted to fit the needs of each case. In the Bergen division there are no large towns or cities and no 5-cent areas. Existing rates of fare will continue practically without change.

The most important of the six railway divisions is Essex, which includes the cities of Newark, East Orange and Orange, as well as numerous suburban towns and villages. In a general way the trolley lines radiate from the center of Newark to the surrounding communities, although there are also some crosstown



In Essex the Distance from the Center of the City to the End of the 5-Cent Area Varies from 2 to 4 Miles

lines. The 5-cent area includes nearly the whole of the city of Newark, as shown in the accompanying map, as well as Harrison and part of Kearny. An exception had to be made in favor of these towns because they lie so close to the heart of the city, being separated from it only by the Passaic River, that the mileage of a trolley trip to reach there would be too short for a double fare. Two fares will be charged for the trip to Port Newark as has always been the case.

All other towns in the division lie in a second 5-cent zone, except those at the extreme end of the Bloomfield line. This route is the longest running to the west, and has a third zone, in which the fare is 8 cents, at the end of the two 5-cent zones. The through fare from Newark to Caldwell thus becomes 18 cents instead of 16 cents (or 15 cents in tokens). The short Eagle Rock line will continue to collect an 8-cent fare because of its difficult operating conditions.

On the majority of the bus lines in Essex the fare is 5 cents, and in many cases the fare limits coincide with the new railway zone limit. Trolley and bus will be on a basis of approximate equality so far as length of ride and fare are concerned to Harrison and Kearny. to North Newark, Forest Hill, Roseville, Vailsburg, Hillside and Elizabeth. On the Bloomfield line the 5-cent fare limit for the bus is at Bloomfield Center, more than a mile beyond that of the railway. Similarly the buses run into Irvington for 5 cents, while the

trolley fare limit is at the Newark city line. But on the other hand, the fact that several north and south car lines run through from city line to city line permits a much longer ride for 5 cents than is possible by bus because the latter lines all terminate in the center of the city.

The distance from Broad and Market Streets to the fare limit varies from about 2 miles on some lines to somewhat more than 3 miles on others. A kink that may cause some trouble is due to the bulge in the city line at South Orange Avenue. The distance a passenger may travel for a single fare on that route is thereby greatly increased over that which he can get on any parallel line.

New Fare Favors the Railway in Hudson County and Medium-Sized Cities

Second in importance is the Hudson division, serving Jersey City, Hoboken, Bayonne and neighboring municipalities. Here Bayonne was made one zone, Jersey City and Hoboken another zone, and the north Hudson towns a third zone. Throughout this division the prevailing trend of traffic is to and from the ferry terminals and the Hudson River tunnel stations. There is no suburban area outside the cities, and the greater part of the trolley patrons are riders within a single 5-cent area, except that many Bayonne people travel into Jersey City.

A curious feature of the situation in this district is that the bus lines in Jersey City have until recently charged a straight 10-cent fare. There has always been, therefore, a differential in favor of the railway, which became even more marked with the reduction of the base rate from 8 cents to 5 cents. This has now been met to some extent by a reduction in the bus rate to six tickets for 50 cents, and it is planned to inaugurate a weekly pass scheme with unlimited riding privileges for 90 cents.

Paterson and Passaic are typical mill towns. Geographically they cover comparatively small areas and they are therefore logical 5-cent communities. The buses did a tremendous business when their fare was 5 cents against 8 cents on the trolley. By the new plan, cars and buses are put on an almost equal footing, and it is to be expected that by the change the railway will profit in number of passengers carried. If this increase is great enough it will offset the smaller return per passenger.

Elizabeth, in the central division, is another typical 5-cent town. Local riding on the railway will probably be stimulated by the reduction in rates. However, on the Union line, an interurban route reaching that city, many people will have to pay higher fares because the old single-fare limit was beyond the city line. In the other towns of the central division the old 8-cent rate remains unchanged.

Situation in Southern Division is Unique

In Camden the layout of the trolley routes is the closest approach of anywhere on the Public Service system to the purely radial plan. Practically every line terminates at the Market Street ferry to Philadelphia. But one or another of the Pennsylvania, Reading and W. J. & S. railroads closely parallels each important railway route. So do the buses. Competition is therefore more intense, in that respect, in the Southern division than in any other.

The standard bus fare in this territory is 7 cents. Under the old conditions, therefore, the buses had the advantage of the trolley by 1 cent. Now the advantage is the other way within the city limits, the differential being 2 cents. But the people of Merchantville, Moorestown, Maple Shade, Haddonfield, Collingswood, Haddon Heights, Gloucester, Woodbury and other suburban towns find the new railway fare higher than the old.

This situation may result in loss of business for the company. Take, for example, the town of Haddonfield. Commuters to Philadelphia used to ride to the ferry for 7½ cents (using tokens). Now they must pay 10, and in addition thereto must pay 4 cents to cross the river. But the new 14-cent rate is higher than the monthly commutation rate on the railroad, which includes the ferry fare, and there are indications that former trolley patrons may desert this means of transportation.

Methods of Fare Collection

A number of changes in the method of fare collection have had to be made in order to meet the demands of the situation presented by the new fare. Such lines as operate wholly within the limits of a 5-cent area operate on a simple pay-as-you-enter basis with a nickel rate instead of the former 8 cents. These cars carry a sign on the front dash reading in red on a white background "Five-Cent Fare."

A large number of routes run from the center of a 5-cent area to points outside the city limits and charge, therefore, a second 5-cent fare to reach the suburbs. On these lines the method of fare collection is pay-as-you-enter in the first zone, with free exit in that area and pay-as-you-leave in the second zone, with free entrance. Thus, local riders in either area may ride for a nickel, whereas through passengers pay 10 cents. In the vestibule window of each car on such routes has been placed a reversible sign reading "Enter at Rear, Pay as You Enter" or "Enter Here, Pay as You Leave." Dash signs indicate the fare.

In Essex, the largest of the railway divisions, one or the other of these two plans covers all important routes except Bloomfield. This is the longest line operating westward from Newark, as previously mentioned, and under the old arrangement it was a two-fare route. The fare limit was the boundary between Montclair and Verona, although a long overlap in the town of Montclair was permitted. Fare collection was by means of a second fare collector, who boarded the car at the overlap limit and collected from each person on the car either a cash fare or an identification check showing the passenger had boarded within the overlap. Under the new arrangement the Bloomfield line will have three fares. Outbound from the Public Service terminal to the Newark city line a 5-cent fare will be charged on the pay-as-you-enter plan. From the Newark city line to the Montclair-Verona line another 5-cent fare will be charged pay-as-you-leave. Passengers who come through from Newark intending to go into the third zone will pay their second fares to the collector who passes through the car as under the old arrangement. The third zone, between Montclair and Caldwell, will be an 8-cent pay-as-you-leave area. Inbound, the process is practically the reverse of this arrangement.

A number of slight changes may have to be made before the new arrangement will work smoothly. But inasmuch as only four days elapsed between the acceptance of the plan and its being put into effect, it was inevitable that this should have been the case.

Association News & Discussions

Claims, Emergency Stops, Weekly Pass, Bus Competition Interest Mid-West Association

Quarterly Meeting of the New Organization of Electric Railway Men of Six States Has a Large Attendance—Guests Are Entertained by Kansas City Railways

THE interest and enthusiasm displayed by the members in every paper presented at the second quarterly meeting of the Mid-West Electric Railway Association held at Kansas City, Mo., on Thursday, Sept. 20, was evidence that the association has succeeded in its purpose of bringing the officials of the electric railway industry in this territory closer together in an effort to solve one another's problems through an exchange of ideas and suggestions on subjects of importance to each company. More than 100 guests from six Middle-Western states were present.

The first paper at the morning session was presented by F. H. Harrington, general claims agent of the St. Joseph Railway, Light & Power Company, on "What the Operating Department Can Do for the Claim Department." He explained at some length the absolute necessity of harmony and close co-operation between these two departments. In too many instances the motormen and conductors fail to secure witnesses and statements from the parties in an accident when the trainmen feel that the responsibility for the accident rests entirely with the other party.

"The trouble is," said Mr. Harrington, "that the passenger or motorist states he is not hurt and pretends that the accident was a trifling matter, leaving the trainman under the impression that nothing would be done about it, and consequently negligence in securing the names of proper witnesses results.

"Then the passenger or motorist later 'develops' an injury, which was, of course, 'the direct result of the accident,' 'snitch' lawyers come to the rescue of the plaintiff, and in most cases the company must pay. The fact that the plaintiff told the trainman he was not hurt is of little value to the claim department and then, too, there is the absence of witnesses."

Retaining a trainman in the employ of the company merely to serve as a witness in an injury or damage case is not advocated by Mr. Harrington, especially when that trainman's record justifies immediate discharge.

In the discussion of this subject, R. B. Campbell of the Arkansas Valley Interurban, and R. A. Leussler of the Omaha & Council Bluffs Street Railway, stated that it was their policy to confide in the trainman and explain to him just what a certain accident had cost the company, especially if the record and character of the man was such as to justify his retention in the service. Both agreed, however, that this policy was not advisable where the trainman was to be discharged. Mr. Campbell added further that even in minor accidents where perhaps only a fender of a motor car was bent he called in the motorman to talk the matter over, pointing out that a very serious accident and loss of life might have resulted from such an accident. This method has proved highly satisfactory, resulting in a great decrease in accidents during the past year.

The advisability of mailing questionnaires to witnesses in minor accident cases was approved by the members in that it saved the expense of employing several additional investigators and at the same time reduced the statements of these witnesses to their own handwriting.

E. R. Fitch, district engineer of the Westinghouse Traction Brake Company, St. Louis, presented an interesting paper at the morning session on "Emergency Stops in Street Railway Operation." An abstract of this paper appears on another page.

The afternoon session was opened with a paper on "The Weekly Pass," presented by A. E. Reynolds, vice-president and general manager of the Springfield Traction Company, Springfield, Mo. This subject was of special interest to all members in that the weekly pass has been little tried in the Mid-West Association's territory.

Mr. Reynolds explained that the constant decrease in the Springfield company's receipts during the years 1921 and 1922 demanded some immediate action to increase revenues or it might have become necessary to suspend service entirely. Consequently it was decided to try the weekly pass in an effort to stimulate riding, and upon recommendations of a competent engineer this plan was placed in effect on April 1 of this year.

"I am not recommending the inauguration of the weekly pass as a panacea for your ills on other properties," said Mr. Reynolds, "but with us it has been a life saver. During the few months that the pass has been in use it has demonstrated that there is no loss whatever in transient travel, as the number of 7-cent cash fare riders has increased as many as 10,000 per month over the period when the pass was not in use. There is also a reduction of about 25 per cent in the use of transfers.

"It is a noticeable feature of our operation that since the adoption of the pass the earnings of the bus lines have materially increased. This can, no doubt, be explained by the fact that the pass is good on either street car or buses, whereas it was formerly necessary to pay 2 cents for a transfer from bus to street car. The pass holder uses the cars and buses on an average for about twenty-five rides per week.

"Summing up the whole situation, we are firmly of the opinion, after five months' use of the pass, that it is very satisfactory from all points of view and is one of the best advertising mediums the company could possibly adopt in an effort to obtain the good will of the public."

Mr. Reynolds pointed out that since April 1 the sale of tokens has been reduced about $4,425 per month, while the weekly passes sold in their place represent about $5,500 per month. He also added that unless given plenty of proper publicity for several weeks before its inauguration, the weekly pass would not be successful. In Springfield Mr. Reynolds published a full page advertisement in the daily papers every day for a month prior to the time the pass was put into effect, and a quarter of a page daily for about a month thereafter. At the present time only signs on the cars are used to advertise this feature. Mr. Reynolds gave out the operating statistics given in the table below to show the changes before and after the weekly pass was put on.

The last paper of the afternoon session was presented by William R.

	1923	1922	1921
Gross earnings—first three months	$85,750	$87,266	$88,945
Gross earnings—five months since weekly pass was put on	$151,822	$146,915	$150,281
Car mileage—first eight months	842,344	839,894	.....
Total passengers for five months since weekly pass was put on	2,651,049	2,349,142	.....
Average fare per passenger, cents	5.7	6.2	.....

Taylor, vice-president and general manager of the Kansas City, Kaw Valley & Western Railway, on "Motor Bus Competition and Legislation."

"During the last ten years the commercial possibilities of the motor vehicle have been gradually promoted," said Mr. Taylor. "The hauling of freight came first. It grew from the privately-owned truck to the transfer company in the city, which gradually enlarged its field, until, stimulated by the demands made in the war period, extremely long trips were undertaken. These war demands were carefully fostered and enlarged by the brightest minds in the automobile game. Long trips, however, have proved to be a failure, and motor freight trucking does not pay for a distance of more than 25 miles."

Passenger buses have been successful on the east and west coasts, perhaps better in California, where climatic conditions are ideal. There the chief business is to entertain the crowd of tourists. These tourists are not regular riders and they are always leaving to make room for others.

Hauling of freight and passengers by motor-operated vehicles on hard-surfaced highways has indications of becoming a real public service business. For that reason it must be properly regulated, since it is now in the scheme of things to regulate all public utilities. Regulation is demanded by the farmers, the electric and steam railroads and every thinking taxpayer except the motor salesman. This feeling in favor of regulation is due to the direct effect on hard-surfaced roads and to unfair and unregulated competition. The cost of operating motor buses and the profits to the man in the business are very indefinite. This is due to the newness and to the type of men who have engaged in it so far. Most of them have kept no accurate records. So far as known no bus line paralleling an interurban has made money. It seems that for a bus carrying around twenty passengers it costs between 25 cents and 30 cents per mile to operate.

"Each railroad operator will have to study his own case carefully and, if he so desires, use the motor buses as a feeder, or in self-defense," said Mr. Taylor.

An informal dinner in the Elizabethan Room at the Baltimore Hotel, with talks by Colonel E. M. Stayton, R. W. Williams, and Robert P. Woods, closed the business session.

Colonel Stayton, city member of the Board of Control, Kansas City Railways, spoke briefly on the present pleasant relationship between the Kansas City Railways, the city and the public. Never before has there been a better understanding between the street railway and the public than exists at this time in Kansas City. This happy condition was brought about because the receivers placed all their cards on the table face up, asked the support of the public in building up the property, promised the best kind of service, and then actually delivered the goods.

"The rapid strides made by the receivers in obtaining the good will of the public and the resulting growth in receipts has been truly remarkable," said Colonel Stayton.

"Co-operation Between the Manufacturers and Operators" was the subject of a short talk by R. W. Williams, district manager of the Westinghouse Traction Brake Company.

"With the 5-cent fare in universal use and receipts rapidly falling off, something had to be done to help the operators reduce expenses," said Mr. Williams. "The safety car was brought out to meet this need and it has accomplished its purpose admirably. Indeed, the economies effected by the use of the one-man car operation have resulted in the expansion of this form of transportation until today we have in Kansas City one-man two-man cars equipped with multiple-unit control and complete safety car apparatus, operated in two-car trains."

Mr. Williams added that the problems of the operators were also the problems of the manufacturers and urged close co-operation between these "departments" of the electric railway industry to bring about the best results.

The meeting closed with an interesting talk by Robert P. Woods, vice-president and general manager of the Kansas City, Clay County & St. Joseph Railway, on "Sightseeing in Europe." Mr. Woods recently returned from a three months tour of France, Holland, Belgium, England, Scotland and Ireland. In addition to his pleasing description of conditions in Europe at this time, Mr. Woods provided a stereopticon exhibition of more than 100 scenes visited during his travels.

A number of supply men from this territory attended the meeting and, as Mr. Fennell, president of the association, stated, these "commercial ambassadors" played an important part in making the convention a success.

The place and date for holding the next quarterly meeting will be decided by the executive committee within the near future.

Emergency Stops in Street Railway Operation*

By E. R. Fitch
District Engineer Westinghouse Traction Brake Company

THE shortest possible stop that can be effected with a moving car irrespective of possible equipment damage is the first requirement of an emergency application of the brakes, within the limitations, however, that the greatest possible equipment damage should be materially less than the average collision cost. One of the most important considerations in obtaining a clear understanding of emergency stopping is wheel sliding. When the wheels of a moving car stop turning during a brake application, the length of a stop is materially increased by the sliding. So the shortest stop that can be made occurs when the brakeshoe friction is just at the point of stopping the wheel rotation. If, however, the brake force is too high the shoe friction is greater than the rail adhesion and rotation is stopped even though the car is still moving. Because the sliding friction between the wheel and rail is less than that due to rolling, the stopping distance is increased by the use of too high a brake force. Therefore the fundamental limitation in securing high rates of retardation is the coefficient of friction between the wheel and the rail.

This factor varies widely for different rail conditions so it is necessary that the prevailing conditions govern the brake design. Another important fact to be considered in securing high rates of emergency retardation is that the ratio of the brakeshoe friction to the shoe pressure is not constant. This coefficient varies with the load on the shoe, the actual area of contact between the shoe and wheel, the length of time the brakes have been held applied, and has an astonishingly wide range at different car speeds.

The majority of cars in service are equipped with pneumatic brakes which include three interdependent factors, all of which are necessary to brake application; the pneumatic devices for the control of the air, the brake rigging to transmit the cylinder pressure to the brakeshoe head and the shoes themselves to develop the friction necessary to produce retardation.

For convenience in general comparisons, the nominal brakeshoe force is often expressed as percentage of the car weight, which is then termed the braking ratio of that particular car. If the nominal force developed at the brakeshoes were equal to the car weight, then the brake ratio would be 100 per cent, and if this total shoe pressure were developed with 50 lb. per square inch in the brake cylinder the statement might be extended to include 100 per cent brake ratio on 50 lb. per square inch cylinder pressure. This ratio is practically a standard for the majority of city and interurban cars for a full service brake application. An emergency application of the brakes produces a higher brake ratio.

Modern car equipment supplements the air brake with three safety combinations, that is, the hand brake, reversing the motors, and "bucking" or generating of the motors. Due to the limited space available the air and hand brakes are interdependent, and in a sense so are the reversing and bucking possibilities, though it is impossible to conceive of a collision and resultant

*Abstract of a paper presented at meeting of the Mid-West Electric Railway Association held in Kansas City, Mo., Sept. 20, 1923.

damage that did not stop the car but rendered all four of these systems inoperative. Hand brakes are hardly to be considered a factor in emergency stopping, for they actually require several seconds for a serviceable application, and time is the all-important factor until the brakes are set. Reversing the motors with power on the car quickly applies a retarding effect which, however, is not comparable with the air brake emergency retardation in amount and is a uselessly severe strain on the motor and control equipment. Similarly, bucking the motors even though the circuit breaker is out or the trolley off produces a quick retardation but retains the same disadvantages as does reversing. Retardation can be accomplished in this manner on any car equipped with direct-current series motors with the series parallel type of control, or where any two of the car motors can be connected in parallel.

The relative effectiveness of these four methods of retardation would be in the following sequence: Emergency application of the air brake, reversing the motors, bucking the motors and hand brake, though the relative average resulting damage to equipment would undoubtedly be hand brake, emergency application of the air brake, reversing and bucking. Under no consideration should any two of these methods be used together. This restriction is unusually important and is unfortunately often disregarded through ignorance or lack of proper instructions.

The reason for this fixed restriction is found in the fact that the emergency application of the brakes is designed to produce a retarding effect just short of wheel sliding, and any additional drag on rotation is sure to lock the wheels. The average retardation for the rest of the stop would be about one-third as effective as if the wheels were turning, and even the use of sand under these conditions will not help the situation materially, for the resulting increase in the rail friction is not sufficient to counteract the increased drag on wheel rotation.

It is obvious that the entire question of emergency stopping depends upon the adhesion of the wheel to the rail, and under adverse rail conditions the coefficient of adhesion attains but a fraction of its normal or dry rail value. This factor varies from about one-tenth for the poor rail condition to about thirty-five-one-hundredths for the good rail with all the intermediate values at times. The statement is often made by our steam road confrères that "a wet rail is not necessarily a bad rail but is often times the reverse." In traction service, unless the cars are operated on private right-of-way with the rail heads at a nominal elevation above the ground surface, a wet rail is invariably bad. Enough mud, slime, and slush is deposited on the rail by traffic or splashing to keep it constantly lubricated with a slippery sediment, and a rain that cleans a surface elevated slightly over the ground is equally as bad on flush surface rails as a fine greasy mist. For street railway operation the brakes are designed to develop their maximum rate of retardation on dry clean rail, and are made extremely flexible or sensitive to control for the adverse track conditions.

There is no doubt that slippery rails preclude the use of the emergency application except on straight air-brake cars where a quick application does duty for emergency, for this brake is capable of an immediate release. Equipment with an emergency valve or triple valve, however, cannot be immediately released, and with these the use of emergency position of the brake valve should not be encouraged when operating on bad rail. There is altogether too much tendency in the operating department to feel that everything possible was done to prevent a collision if an emergency application was made, even though wheel sliding took effect immediately.

A thorough explanation of the proper use of sand should be given new men. Before sliding occurs sand increases the coefficient of adhesion about five-one-hundredths, but after wheel sliding has started the coefficient of kinetic friction between the wheel and rail amounts to about one-third that of adhesion and the slight increase resulting from the application of sand produces little effect on the length of stop but does increase the tendency toward flat wheels.

The problem of securing satisfactory emergency stops when operating on heavy grades introduces another factor into an already complicated situation. To have full control of a car on a down grade it is necessary to develop an average retarding force equivalent to the grade force of acceleration. For convenience this retarding force might be expressed as a required brake cylinder pressure to overcome the grade effect, and the difference between this pressure and the total actually obtainable on the car would be available for making a stop. If a 30,000-lb. double-truck car braked at 100 per cent on 50 lb. per square inch pressure with a passenger load of thirty-three people, or about 5,000 lb., started down a 5 per cent grade at 15 m.p.h., then a brake cylinder pressure of 18 lb. per square inch would be necessary to just control the car and the remaining pressure would be available for stopping. On a level this car would make an emergency stop in about 28 ft., whereas on the 5 per cent grade the stop would be accomplished in about 37 ft. The stop distance, therefore, due to the grade alone, has been increased 9 ft. or, for these conditions only, about 30 per cent.

Grade requirements for brake design in traction service include special provision for decreasing the length of stops by using higher brake ratio and also throw an added burden on the car operator. The only satisfactory answer to the question of emergency stopping on severe grades is that of added caution, lower speeds, and road tests of equipment.

Delegates Consider Safety Measures

Electric Railway Section of National Safety Council, at Largest Meeting Ever Held, Discusses the Best Methods of Preventing Accidents

GREATER co-operation between the American Electric Railway Association and the Electric Railway section of the National Safety Council on the preparation of bulletins and other phases of safety work affecting the welfare of the electric traction systems of the country was urged by J. H. Truett of the safety committee of the United Railways & Electric Company of Baltimore, chairman of the electric railway section of the National Safety Council, at the opening session of the section in the Hotel Statler in Buffalo on the morning of Oct. 2.

The meeting was the largest and most interesting ever held by this section. About seventy-five representatives of electric railway lines throughout the country were present. The room given over to this section by the National Safety Council was too small to accommodate all who wished to hear the addresses and participate in the discussions which followed, so that larger quarters were prepared for the second session of the conference held on Thursday.

Chairman Truett opened the meeting of the section with a brief address in which he told of the increased support being given by electric railway systems to the problems of public safety, and he urged even greater support in the future. M. W. Bridges, secretary of the section and safety engineer of the Metropolitan West Side Elevated Railway of Chicago, presented a brief report of his activities during the year and pleaded with members to submit more safety suggestions to the council.

According to Mr. Bridges, the membership of the section had increased during the past year from 110 to 126. In February the executive committee created a committee on public education with Victor Noonan of the Cleveland Railway as chairman to assist in educating the traveling public through the use of newspaper advertising, car cards on dashboards, posters, etc., in accident prevention among railroad patrons. The membership committee was authorized to approach the 283 members of the American Electric Railway Association, which were not members of the council, with the view of securing their membership.

The membership committee reported that through an active campaign the membership had been increased.

The bulletin committee asked for suggestions for bulletins and said that the safety educational methods incor-

porated in bulletins issued by the committee have done much to reduce accidents. The only complaint found by members was that there have not been enough bulletins. At this point in the discussion members urged greater cooperation between the bulletin committee and the advertising section of the American Electric Railway Association regarding the size of bulletins. Standardized sized bulletins were urged and members were asked to submit to the committee the sizes of the bulletins they use so that the committee can present facts on plans for standardized bulletins at the next meeting.

It developed during the discussion that one company is required to pay the company which has the exclusive advertising contract in its cars $3,600 a year to put bulletins on safety inside its cars. It was suggested that swinging signs from the roof of the car be used, as this does not infringe upon the rights of the advertising companies.

George B. Anderson, manager of service of the Los Angeles Railway, Los Angeles, Cal., was unable to attend the conference and his paper, "The Award System as a Means of Preventing Accidents," was read by John C. Collins, supervisor of safety for the Los Angeles Railway. This paper is published in abstract in this issue.

G. T. Hellmuth, claims attorney for the Chicago, North Shore & Milwaukee Railway, opened the discussion by saying that the Los Angeles plan promotes safety and courtesy, and he urged that the subject be continued another year so that additional suggestions could be secured from other railways.

H. M. Keyser, secretary and claims attorney of the Washington Railway & Electric Company, Washington, D. C., gave a few figures applying to the Washington company since the inauguration of a safety campaign. Accidents arising from collisions of cars have been reduced 66.7 per cent, Mr. Keyser explained; no-report cases were cut 47.8 per cent; serious injury cases, 42 per cent; not serious injury cases, 24.6 per cent, and deaths arising from accidents were reduced 43.7 per cent.

R. R. Hadsell of the New York State Railways, Rochester Lines, was appointed chairman of a special committee to continue the investigation of the award system as a means of preventing accidents. The committee was authorized by Chairman Truett to gather data from railways throughout the country using the merit system and compile it for distribution among members of the electric railway section of the council. Mr. Hadsell was authorized to appoint his own committee to assist him in the undertaking.

Chairman Truett appointed this nominating committee to report at the Thursday morning meeting: A. W. Koehler of Rochester, D. D. Haskins of Chattanooga and D. E. Parsons, general manager East St. Louis & Suburban Railway, East St. Louis, Ill.

An account of the Wednesday and Thursday sessions will appear in a later issue.

The Award System as a Means of Preventing Accidents*

The Merit and Demerit System Was First Ridiculed but Is Now Recognized as Desirable and Has Reduced Damage Claims—Company Morale Improved, and Pride in a Clear Record Is Clearly Evidenced

By GEORGE BAKER ANDERSON
Manager of Transportation Los Angeles Railway

AN INSPECTION of the methods generally employed among street railway operators up to a comparatively recent period indicates the lack of an adequate system of checking and recording the services of trainmen worthy of commendation, and those calling for disciplinary action. There are today in the United States many thousands of trainmen who have persistently violated certain necessary rules and have been suspended from service for from one to ten days in their records—but in their records only—such suspensions not resulting in the loss of a moment's time or a dollar in their pay envelopes. As the result of such so-called discipline, the individual involved was warranted in feeling a certain sense of security, regardless of the storm signals raised. Under the merit system as applied in Los Angeles, all this has been changed.

The plan, at first opposed, even ridiculed by some of the 2,500 men in the platform service, now apparently meets with the approval of practically all, the exceptions being some extra men not yet under the system and a few indifferent ones.

No man is entitled to participate in the bonus of $60 per year until he has been in the service six months. The amount of the bonus paid depends entirely upon the trainman's record under the merit system. During this probationary period, no man receives credits or demerits. On the day following the expiration of the probationary period the name of the trainman is entered upon the "efficiency record" card with a standing of 100 per cent. The bonus year begins Dec. 1 and ends Nov. 30. The bonus is paid by special check at a general assembly of the men on Dec. 15, a date decided upon because of the holiday needs of the men. To be entitled to the bonus or any portion thereof, a trainman's name must be on the payroll the last day of the bonus year, Nov. 30. On that date all records are cancelled, and every man starts the new bonus year, beginning Dec. 1, with a rating of 100 per cent.

SAFETY AND COURTESY EMPHASIZED IN MERIT SYSTEM

Demerits are assessed for infractions of certain important operating rules.† The rules pertaining to safety and courtesy come first. Violations of these rules bring the heaviest penalties, and careful observance of them brings substantial reward.

The operating heads of the Los Angeles Railway believe that under normal conditions a trainman who is courteous and considerate in his dealings with passengers is attentive to considerations of safety also. The transportation department has set forth very plainly that valid excuses may be offered for almost any failure except insolence or discourtesy, and most collisions between cars. Running ahead of time also is dealt with severely, as it is regarded as one of the most unnecessary and demoralizing practices and as exhibiting an inclination toward careless operation. A comparison of notes for three years or more indicates that the man who persistently runs ahead of time is a man who is inclined to take chances. His desire to "beat it" leads him into dangerous situations. All other forms of dangerous operation likewise are penalized.

For some offenses like the vicious practice of running ahead of time, demerits are cumulative. Cumulative demerits sometimes result in automatic dismissal, a man's connection with the company terminating when his rating on the merit card falls as low as 75 per cent.

The bulletin announcing the establishment of the merit and bonus system was issued on April 9, 1920. It read as follows:

> To foster efficiency, the existing method of discipline for trainmen will be discontinued and a Merit System, or plan of "Discipline by Record," instituted, effective April 10, 1920. Every trainman will start with a clear record.
>
> Credits will be given for meritorious service, such as alertness in preventing accidents, the exercise of good judgment in emergencies, making accurate reports and other acts worthy of special commendation. Demerits will be given when discipline is necessary. Each five credits will count 1 per cent on record and each five demerits will count 1 per cent off record. Demerits will be charged only when, after investigation, a trainman is found to be at fault.
>
> Ratings will be made upon reports from division superintendents, supervisors, patrons and other sources. A rating of 100 per cent will represent the maximum of capacity, efficiency, service and conduct. A rating of 75 per cent will represent the minimum of capacity reasonably allowable. A rating below 75 per cent should represent a standard of service, capacity and conduct below any reasonable requirement and will be sufficient cause for dismissal from the service.
>
> If upon investigation extenuating circumstances are found to exist and reinstatement is approved, the trainman so reinstated may resume his duties with a standing to be determined by the head of the department.
>
> An accumulation of markings above 100 per cent will be sufficient cause for special consideration of trainmen.
>
> The rating will be entered upon individ-

*Abstract of paper presented at annual meeting of National Safety Council, Buffalo, N. Y., Oct. 1-5, 1923.

†A list of the ratings for merits and demerits for the Los Angeles Railway Corporation was published on page 721 of the issue of this paper for April 28, 1923. With the exception of a few slight changes in ratings this list still applies. Other particulars of the merit system will be found on page 131 of the issue for July 22, 1922. —EDS.

#29462

TRAINMAN'S EFFICIENCY RECORD CAP NO. 3947

NAME Comstock, R. P. (5-16-19) DIVISION NO. 6

DATE	DISCIPLINED FOR	BY	Credits	Demerits	Per Ct.	Bonus
	Fiscal Year 12-1-22 to 12-1-23.					
Dec. 17	8 Reported accident and secured witnesses 12-12-22	Acc.17423	15		103	
Dec. 28	2 12-20-22	" 17594		20	99	
Dec. 31	Courtesy only	R.B.H.	10		101	5.00
Jan. 2	38 Ran over stop sign 12-28-22	A.K.P.		10	99	
Jan. 8	8 Reported accident and secured witnesses 12-29-22	Acc.18125	15		102	
Jan. 9	8 Reported accident and secured witnesses 12-30-22	Acc.18192	15		105	
Jan. 11	38 Missout 12-13:1-3:1-4.	Supt.		10	103	
Jan. 27	12 1-18-23	Super.		10	101	
Jan. 28	12 1-24-23	"		10	99	
Jan. 31	No clear record for courtesy or safety					4.75
Feb. 16	Put at foot of extra list for three days because of missout					
Feb. 18	12 2-14-23	Super.		10	97	
Feb. 28	Courtesy only	R.B.H.	10		99	4.75
Mar. 9	Put at foot of extra list for three days because of missout					
Mar. 29	2 3-22-23	J.C.C.		20	95	
Mar. 31	Courtesy only	R.B.H.	10		97	4.25
Apr. 5	38 Missout 3-28-23	Supt.		10	95	
Apr. 23	Put at foot of extra list for three days because of missout					
Apr. 30	Courtesy only	R.B.H.	10		97	4.25
May 7	38 Missout 4-24-23	Supt.		10	95	
May 14	12 5-11-23	Super.		15	92	
May 17	12 5-14-23	"		20	88	
May 20	11 & 31 5-16-23	"		25	83	
May 23	12 5-18-23	"		25	78	
May 24	11 5-20-23	"		20	74	
May 24	Automatically dismissed because of low record.					
May 25	Reinstated with an efficiency rating of 100%	R.R.S.			100	
May 31	8 Reported accident and secured witnesses 5-25-23	J.C.C.	15		103	
May 31	Courtesy only	R.B.H.	10		105	5.00
June 30	Courtesy and safety	R.B.H.	20		109	5.00
July 16	8 Courtesy shown patrons 7-12-23	R 123	15		112	
July 31	Courtesy and safety	R.B.H.	20		116	5.00
Aug. 31	Courtesy and safety	R.B.H.	20		120	5.00

#27933

TRAINMAN'S EFFICIENCY RECORD CAP NO. 3865

NAME Ramsey, S. C. (2-23-18) DIVISION NO. 6

DATE	DISCIPLINED FOR	BY	Credits	Demerits	Per Ct.	Bonus
	Fiscal Year 12-1-22 to 12-1-23.					
Dec. 15	8 Efficiency in operating car 12-6-22	Super.	15		103	
Dec. 31	Courtesy and safety	R.B.H.	20		107	5.00
Jan. 6	8 Excellent instruction of student 1-2-23	Instr.Dept.	15		110	
Jan. 31	Courtesy and safety	R.B.H.	20		114	5.00
Feb. 10	8 First to report blockade 2-6-23	Super.	10		116	
Feb. 27	8 Assisted crippled man off car 2-21-23	F-22	15		119	
Feb. 28	Courtesy and safety	R.B.H.	20		123	5.00
Mar. 12	8 Quick stop, preventing accident 3-9-23	S-45	25		128	
Mar. 31	Courtesy and safety	R.B.H.	20		132	5.00
Apr. 30	Courtesy and safety	R.B.H.	20		136	5.00
May 6	8 Assisted after accident 5-1-23	J.C.C.	10		138	
May 31	Courtesy and safety	R.B.H.	20		142	5.00
June 13	8 Valuable information 6-10-23	J.C.C.	15		145	
June 30	Courtesy and safety	R.B.H.	20		149	5.00
July 31	Courtesy and safety	R.B.H.	20		153	5.00
Aug. 17	8 Worked extra trip to assist supervisor 8-13-23	Super.	10		155	
Aug. 31	Courtesy and safety	R.B.H.	20		159	5.00

Efficiency Cards—Above, That of a Motorman Who Discharged Himself but Built Up His Record Again. Below, a Good, Clean Record

ual cards and each record may be examined at any time by the man affected.

As an incentive to trainmen to maintain the highest possible efficiency, the company has set aside a fund based upon an award of $60 per year, or $5 per month, covering the period from April 10, 1920, to Nov. 30, 1920, inclusive, for each man in the service coming under the operation of this rule, which will be paid on Dec. 15, 1920, to each man in the service on Nov. 30, 1920, who has a clear record and has been continuously in the service of the company for the entire period; and the proper proportion of this amount to those who have a clear record and have been in the service of this company for more than six months and under eight months; or the proportion of such sum as has been earned.

All records will be balanced monthly and the percentage of efficiency determined thereby. This efficiency rating for each month will determine the proportion of the maximum amount to be credited to each trainman for that month.

Such portion of the total amount set aside for distribution as may not be absorbed through the operation of the foregoing plan, by reason of the failure of any trainmen to attain ratings entitling them to the extra money, will be applied to a fund for the relief of all employees.

A deduction of 25 cents is made for each 1 per cent below the 100 per cent standard for any month. (Example: A rating of 95 per cent leaves but $3.75 due the trainman for that month.)

Anything affecting the pocketbook of the average wage earner is of immediate interest, but as has been shown, the amount of cash a trainman receives at Christmas time is not the greatest spur in all cases. There have been many cases in which men have gone to great lengths to disprove charges on which demerits were based, although the rating of these men was so high that there was no probability of their failing to receive the full bonus for the year. Keeping their records clear of demerits was with them a matter of personal pride. In many other cases trainmen have exerted strenuous efforts to eliminate or counterbalance demerits, but not until the percentage of efficiency fell below 100 per cent and meant actual monetary loss to them.

R. R. Smith, assistant superintendent of operation, who is in charge of the administration of the Los Angeles Railway's merit system, states that a comparison between the handling of discipline under this plan and the haphazard methods which prevailed before its adoption proves conclusively that the merit system is the logical way to administer discipline. But as we profit by experience, he finds it necessary from time to time to make certain changes.

Administration of Method Important

The close relationship between the morale of the men and the administration of discipline by record makes the methods of such administration of paramount importance, and we find that several factors should be given consideration in changes to be made for the coming fiscal year. In the first place, in order to maintain the morale of the men, reports on which demerits are assessed must be of such a nature as to allow no doubt as to their reliability. Most of the recommendations on which demerits are based come from secret service operatives and supervisors (or inspectors). More attention is to be paid to details in making such reports, and with few exceptions the conditions under which our men are operating are such as to make it necessary at times for a man to use judgment in enforcing a rule. The supervisor or operative who recommends demerits merely because he notes the violation of a rule, without making allowance for obvious extenuating circumstances, is doing much toward breaking down the morale of the men.

The ideal plan, toward which we are working, is to place the records in charge of one competent person who can devote all his time to the administration of the system, follow up recommendations for discipline as they are received, increase penalties in cases where men are shown to be repeaters, and fix a definite length of time for demerits to stand, after which, if it be proved by the record that the man has profited by the assessment of such demerits and has not repeated the offense, the demerits will be automatically canceled.

If there has been one mistake a little more surely demonstrated than the others during the first three years of the operation of this system it is that of having been too generous in the award of credits. It has been found in some instances that men with high efficiency ratings, but with some demerits, are disposed to treat demerits slightingly after attaining what appears to be a position of security, so far as the bonus is concerned. Such men are disposed to make no appeal on account of demerits assessed until after their efficiency rating has dropped below 100 per cent, when they immediately appeal, in some instances even admitting that they do so because their rating has dropped to the point where it prevents them from earning the full bonus. These short-sighted men, of course, lack the proper spirit of service, but they are not numerous.

Generally speaking, during the past three and a half years the number of accidents and the volume of claims and damages on the books of the Los Angeles Railway have shown us material increase year by year, although during that period the population of the city has increased approximately 50 per cent, the number of cars in service has increased 26 per cent, the daily mileage

has increased about 10 per cent, the number of passengers carried upon the street cars has increased more than 40 per cent. Just how much of the credit for this rather remarkable showing should be awarded to the merit system is hard to determine, but that the plan has operated effectively to reduce accidents of all classes is admitted by all observers, including those authorities who at the beginning were the most skeptical.

The degree of success to be attained through the application of the idea is influenced largely by the character and personality, particularly the temperament, of the individual intrusted with the responsibility therefor. It is highly essential that such authority be a man of firmness, poise and self-control, possessed of capacity for judging men, and actuated by a spirit of justice.

Accompanying this paper there is submitted a specimen efficiency card showing the history of the service of a motorman which resulted in his automatic dismissal from the service, reinstatement after this severe discipline, and immediate improvement in personal service, also a specimen efficiency card showing a motorman's record built up by the merit system.

Safety Principles as Applied to the Individual Utility*

By D. E. Parsons
General Manager East St. Louis & Suburban Railway, East St. Louis, Ill.

OUR safety department is an integral part of our organization. It is headed by a man of ability with the title of safety engineer. Our safety committees are composed as follows: Central committee, consisting of the general manager, general superintendent, and a reasonable number of department heads. This central committee meets regularly once a month and acts upon all suggestions that are offered by the sub-committees. The sub-committees are as follows: Mechanical committee, power committee, gas committee, electrical committee, maintenance of way committee and transportation committee. The personnel of these committees is about forty members. The sub-committees are selected by workmen in the different departments. The committees not only accept and pass on suggestions for the benefit of safety of their fellow workmen, but also make suggestions which are beneficial to our customers—the traveling public. This committee work is interesting and is eagerly sought after by our employees.

We are very favorable to the illuminated bulletin boards placed in conspicuous places. These bulletin boards carry bulletins of the National Safety Council and others of interesting world events.

Our safety engineer, in addition to attending meetings of all committees, makes a monthly inspection of every nook and corner of the property for accident and fire hazards, and makes, in addition to the committee reports, his own report of his inspection. Before we made our systematic inspections our annual fire insurance was $953,000 with an annual premium of $4,923, or a basic rate of 51.7 cents per $100. Today the total amount of our insurance carried is $1,862,000 and the annual premium is $5,493, with a basic rate of 29.5 cents per $100. This showing has been accomplished by careful inspection and good housekeeping, and no expenditure of new money was approved that would not pay for itself in premiums in two years.

In all of our safety and fire prevention work, as well as our compaigns on unusually clean cars and courteous employees, we did not forget to inform our traveling public in well-worded advertisements what we were accomplishing for their benefit. Our advertising is not spasmodic but is continual in all cars and in all newspapers in all the cities in which we operate.

With our continual safety program we endeavor to interpose occasionally some special stunt which adds to the interest of our work. For instance, in 1921, we painted one of our regular city cars several coats of white enamel with bulletins on the sides and ends of the car. The following were some of the slogans used: "Do your duty, obey the laws and ask others to do likewise." "Reckless drivers make your city unsafe for safe drivers."

Recently we installed on two interurban cars Klaxon, air-operated horns. Such a horn warns the driver of the noisiest Ford or truck of the approach of the car and meets the approval of all the communities in which we operate. We believe that this Klaxon air-operated horn is much more satisfactory than the standard air whistle on the average interurban car.

We have decided to change the wording of the picture on our 300-ft. highway crossing signs every two years so as to make them so attractive that they will not be overlooked by any automobile driver.

We have been able partially to convince the Illinois Commerce Commission that about 50 per cent of our crossings are extra-hazardous instead of about 10 per cent and the commission has ordered "stop" signs installed. According to Illinois law automobile drivers must stop before a crossing where these signs are placed.

At the suggestion of our local automobile clubs we recently adopted a special lens on interurban headlights that somewhat obviates the glare and, at the same time, gives the same illumination as the original clear glass lens. This has met the approval of the automobile drivers.

We recently adopted a rule on our interurban lines where hard roads cross the right-of-way that motormen must approach and pass over such crossings at such speed that collisions would be improbable. This is in addition to our regular rule that motormen must sound whistle or ring bell vigorously on approaching such road crossings. We believe that this rule has materially reduced highway crossing accidents.

There has been a continual decrease in the number of accidents to employees from year to year, in spite of an increase in the number of employees. There has also been a decrease in the expense for injuries and damages. On the East St. Louis Railway, 2.29 per cent of the gross passenger revenue is our record for the year 1922; for the East St. Louis & Suburban Railway suburban and interurban lines it is 4.85 per cent. Automobile collisions with interurban cars in 1921 were 171; in 1922, 149. On the East St. Louis Railway, which is strictly a city line, in 1921, the automobile collisions were 218 and in 1922, 270. A careful analysis of the automobile and car collision records shows there has been a decrease each year in the number of collisions where our cars were moving at the time of the collision, but there has been an increase in the number of collisions where automobiles collided with our cars that were standing still.

The trouble with the average manager of a public utility who is not thoroughly in accord with spending even 1 per cent of his gross income for safety work is that he allows the operating department to start a safety program and if it does not show a decrease in money expended for injuries and damages the first or second year he becomes skeptical and is not in thorough accord with the movement. It will take more than two years on most properties that have not had thoroughly organized safety work to make a very material saving in dollars and cents. The management of nearly every public utility property has a hobby of some kind which is pleasing to its patrons or customers, and I do not know of any hobby that an up-to-date manager could adopt with less expense for the benefit of the public than well organized safety. It has proved that it is conducive to good business.

*Abstract of paper presented at annual convention of National Safety Council, Buffalo, N. Y., Oct. 4, 1923.

Manufacturers Will Show How They Are Co-operating

ALL exhibitors at the Atlantic City convention next week have been invited to make a little exhibit in their booths showing in what manner they have been co-operating with the electric railways in informing the public, and particularly their employees, on the true situation with the railways. This is in conjunction with the work of the committee on co-operation of manufacturers, headed by E. F. Wickwire, secretary Ohio Brass Company. On Wednesday, a committee, comprising F. R. Coates, L. S. Storrs, H. B. Flowers, D. W. Pontius, James P. Barnes and C. D. Emmons, will inspect these exhibits and present a certificate of appreciation to those companies which have joined in the work.

Maintenance of Equipment

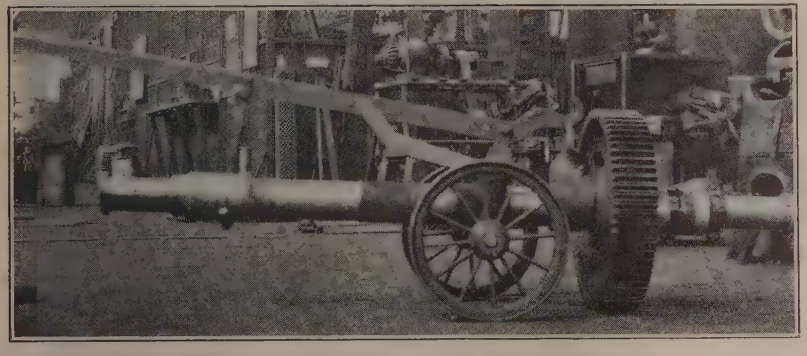
Carriage Makes Axle Handling a One-Man Job

THE machining of axles in the West shops of the Chicago Surface Lines is done in lathes at a considerable distance from the presses where wheels are mounted. The handling and transporting of axles are done in a very convenient manner by a two-wheeled carriage shown in the accompanying illustration. This carriage was made in the company's shop and consists of two cast-steel wheels 18 in. in diameter with 2-in. tread and a cross-connection raised 9 in. above the center of the wheels. This cross-connection is made of 1¾-in. x 1¾-in. iron and has the axles for the wheels fastened at either side.

The carriage can be run over the axle as it lies on the floor with the gear mounted in position. With the carriage over the axle the light end is lifted into a hook support and then by raising the handle another hook at the front end of the carriage can be easily placed next to the gear. Then by lowering the handle of the carriage, the entire axle and gear are lifted free of the floor and can be transported easily.

The handle of the carriage is 6 ft. from the fulcrum to the end, and the extension toward the front of the carriage is 8 in. long. A cross handle 2 ft. long is fastened to the end for convenience in pulling and pushing the carriage. The long handle is made of 2-in. x ⅝-in. iron. The hook for the light end of the axle is 1 in. in diameter, and four holes are provided for adjustment to accommodate different lengths of axles. The hook for the front end of the carriage is made of ⅝-in. x 5-in. plates.

In order to provide a permanent construction and relieve the strain on the handle, two side braces made of ½-in. x 1¾-in. iron are used. These are fastened to the handle and run to the cross-member between the two wheels.



Moving an Axle and Gear to a Lathe for Turning

Use of Steel Castings Reduces Breakage

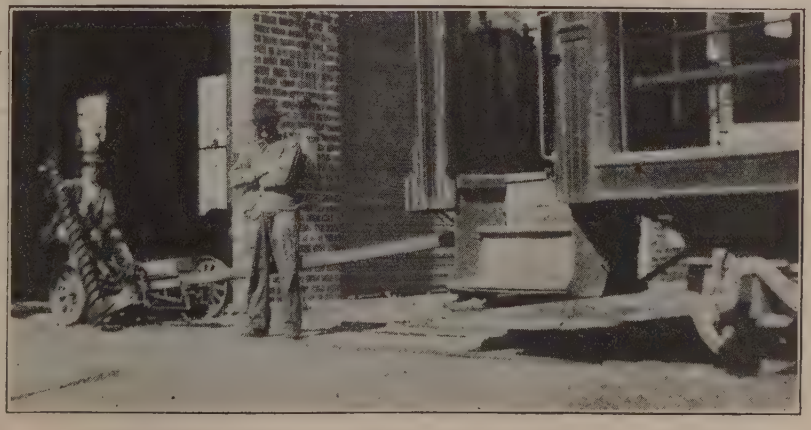
By O. A. NORENE
Assistant Master Mechanic Omaha & Council Bluffs Street Railway

THE life of gears and pinions depends to a great extent on the gear cases being kept in good condition. We have experienced a lot of trouble from broken gear case supports, both on the malleable and wrought iron types. For the last two years we have replaced these with cast steel, from which we have had a very small proportion of breakage. A large part of all our gray iron castings are being replaced by steel castings.

All the various truck and body bolster center bearings are being replaced by one standard cast steel bearing, whereby only one type is now carried in stock in place of six or eight. Nearly all of our malleable iron fender intermediates have been replaced with cast steel, thus greatly reducing the breakage. When they are returned to the shop for repairs they are mostly bent out of shape, but very seldom are broken.

Old Mower Rebuilt for Railway Use

ONE of the cheapest weed cutting machines ever devised was recently built by the Gary & Southern Traction Company, Crown Point, Ind. An old mower was bought from a neighboring farmer for the sum of $4. Worn and broken parts were repaired at the carhouse by acetylene welding, and the device was then mounted on a pair of hand-car wheels. The pole of the mower is attached to the rear of one of the railway's cars. The operator of the machine sits in the seat just where the farmer did when the mower was pulled by horses. Good speed of operation is possible, a 10-mile stretch of track having been completely cut recently in eighteen hours.



An Ordinary Mower Mounted on Flanged Wheels and Pulled by a Railway Car

New Equipment Available

Slanting Bed Switch

THE new Wharton slanting bed switch is a somewhat radical departure from designs of tongue switches now on the market. Two principal features distinguish it: first, a tongue of "I" beam section, gradually increasing in depth from the point to the heel with a corresponding downward slope of the bed on which the tongue rests; second, a novel method to take up wear of the circular heel.

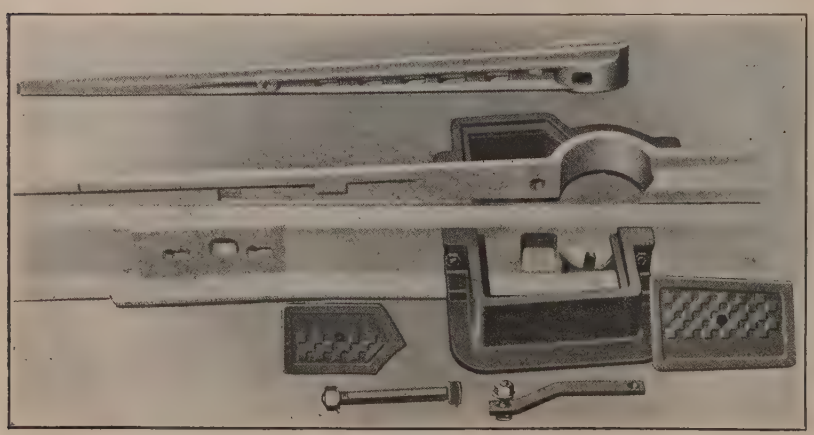
The tongue is made the usual depth at the point, and slopes to a much greater depth at the heel, instead of being of a uniformly shallow depth throughout. The "I" beam section gives it much greater strength, stability and resistance against tilting, or distortion under traffic.

The bottom of the tongue presents an uninterrupted surface in one plane having a continuous bearing on the machine ground bed for its entire length from the point to the extreme heel. There are no depressions or projections of any kind. The increasing thickness gives sufficient depth through the body of the tongue for springs or other actuating devices, without the necessity of a downwardly projecting lug.

Many tongue pivot tightening devices consist of blocks, bearing only on a small part of the lower portion of the circumference of the pivot, and in taking up wear, will not restore contact around the cylindrical bearing surfaces. The heel tightening device of this switch is based on the principle of a split collar. Part of the wall of the socket into which the heel fits, and which is an integral part of the switch casting, is made flexible by a longitudinal slot at its junction with the bottom of the bearing. By means of a large size bolt the wall is drawn in until it hugs the tongue heel. Thus the wear is taken up through contraction of the radial dimension of the socket. The nut of the bolt is located in one of the drain boxes, readily accessible.

A "hold-down" at the center of the pivot, accessible from the other drain box, prevents dirt from working underneath and raising the tongue, although with the sloping bed there is a natural tendency to keep the tongue down and the joint on the tread surface tight.

The downward slope of the bed gives a natural drainage toward the drain boxes, located on both sides of the heel, preventing water from settling at the point of the tongue, except on extremely steep up-grades. This also eliminates splashing on mechanically operated switches. The longitudinal openings through the wall at the heel give opportunity for drainage and for dirt to escape into the boxes, which can easily be cleaned out.



This New Switch Has a Specially Shaped Tongue and a Novel Way to Take Up Wear on the Heel

Weed Burner Has Successful Trial

EXPERIMENTS which were recently made on the property of the Aurora, Plainfield & Joliet Railway with the Lamb weed burner were entirely successful. At a cost of $15 per mile the burner produced as good results, according to the company, as had previously been obtained with a chemical exterminator at a cost of $54 to $65 per mile.

Rear End of Car with Weed Burner Housed. At Right, the Carriage Is Extended and the Seven Burners Are in Operation

The present device is an outgrowth of attempts by the inventor to perfect a burner which would exterminate the weeds without danger of setting fire to vegetation near the tracks. As will be seen from the accompanying photograph, it consists of seven blow torches of large size mounted in a carriage which is projected from the rear end of the box car. Gasoline is used as fuel, and each torch measures 17 in. in diameter by 42 in. long. Played on the roadbed from a height of approximately 3 ft. 6 in., the intense heat at the track level is sufficient not only to exterminate the growth above the ground, but will also dry out and kill the growth to a depth of 2 in. below the surface. Traveling at the rate of approximately 6 m.p.h. and covering a roadbed width of approximately 10 ft., the burner con-

sumes 48 gal. of gasoline per hour, or in the neighborhood of 8 gal. per mile of track. Needle-valves adjust the heat to the growth of weeds.

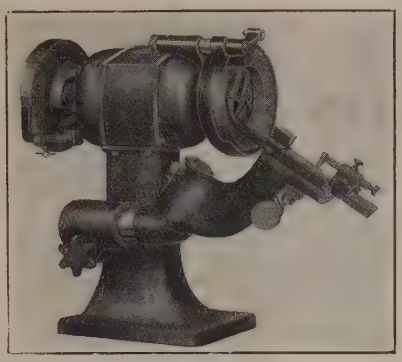
During the first day of the experiment on the Aurora, Plainfield & Joliet Railway a heavy growth of weeds which had previously been cut with a scythe and was very dry was ignited by the burner and a small conflagration was started. However, on the second day of the trial, following a heavy rain during the night, no difficulty was encountered. As is the case with the chemical extermination the results of the process were not apparent until after three of four days, at which time the growth which had been subjected to the burner had dried up and charred, giving the roadbed a very clean appearance. The Lamb weed burner is available either on a rental or an outright purchase basis.

Bench-Type Drill Grinder

SEVERAL improvements have been incorporated in a new bench-type twist drill grinder recently placed on the market by the Gallmeyer & Livingston Company, Grand Rapids, Mich. A self-contained ½-hp. motor drives the grinder, consequently it may be placed in any convenient location in the tool room or on a bench.

The drill holder is so designed that either straight shank or taper shank drills of standard type can be ground. Drills with enlarged shanks or drills mounted in quick change sockets can also be ground without changes or extra adjustments. A swinging arm with diamond mounted therein is provided. This gives a convenient means of adjustment in the process of truing the wheels. For double-holder machines a truing device is furnished for both wheels, and a diamond is part of the standard equipment.

A safety stop is provided for the truing device in the form of a track on a movable section of the wheel hood. As the diamond is advanced into the grinding wheel in the process of truing it, this movable section of the wheel hood with its track is advanced an equal amount. It thus always remains a fixed distance from the face of the grinding wheel. A circular stop on the front of the drill holder abuts against the track and rocks thereon in the process of swiveling the holder. This is so adjusted as to bring the lip rest into close proximity to the wheel. At the same time it is impossible to get the front of the holder or the lip rest into the front of the grinding wheel where it could be ground off.



Twist Drill Grinder for Bench Mounting

On wet grinding machines the end of the drill being ground is flooded by a stream of water 1½ in. wide and about ¼ in. deep, which drops directly on the point of the drill. The water is carried to the special flat nozzle through a ¾-in. hose. Hoods, water pan and guard are provided so as to prevent the water dripping to the floor.

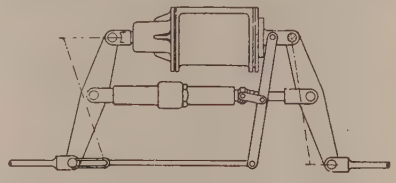
New Type of Slack Adjuster

A TYPE of slack adjuster for electric cars, which has been applied to several hundred on the Paris Metropolitan subway, is now being marketed in the United States under the direction of G. S. Albanese of Paris, who is now in New York.

This slack adjuster takes up the slack in infinitesimal steps as the brakeshoes and the wheels wear down. The principle of this adjuster is based on the action of two nuts on a single high pitched screw. One nut operates, while the other is an auxiliary. These nuts are provided with conical friction surfaces facing in one direction engaging conical seats. The seat corresponding to the operating nut is in the main body to which the operating effort is applied. The auxiliary nut seats in a separate sleeve which is movable in a longitudinal direction relative to the main body and is held normally by a spring in a definite position relative to this main body. This auxiliary sleeve is provided with stops which engage with a point which is fixed relatively to the truck. The screw rod is connected to the lever operating the brake as shown in the accompanying illustrations.

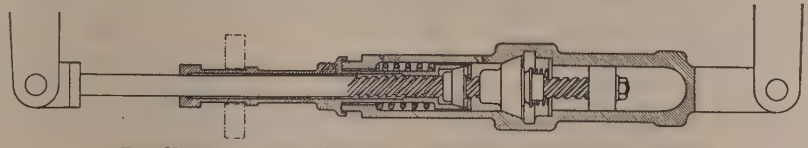
When effort is applied to the main body, the force is carried through the main operating nut, through the screw to the brake operating lever. The auxiliary sleeve moves together with the main body until it is limited by the stop. The movement of this sleeve corresponds to the normal clearance between the brakeshoe and the wheel. If there is any wear, it is evident that the main body will travel still further, and consequently will move relative to the auxiliary sleeve. When this happens, the auxiliary nut will follow the screw, until it strikes the back plate of the auxiliary sleeve, when it travels down the screw as long as the relative movement continues.

When the brake is released again, the main body as well as the sleeve moves back until the sleeve is prevented from moving any further by the stop, which thus limits the return of the brakeshoe to the normal clearance. The main body then continues its movement under the action of the spring until the normal position between the auxiliary sleeve and the main body is regained. During this movement, the main nut is released from its seat and is pushed by a back plate in the main body down the screw just as far as the auxiliary nut has been pushed down when the brake was applied.



Application of Adjuster to One Type of Brake Rigging

This completes the cycle and the wear is automatically taken up, whatever this wear may be. With this type of adjuster, the smallest fraction of wear will be taken care of automatically instead of step by step, as is the case with the usual ratchet arrangements. The entire mechanism is inclosed in a watertight housing, so as to protect it against the elements. Some installations have the chamber filled with a thick grease.



Two Nuts on a High-Pitched Screw Actuate This Slack Adjuster

The News of the Industry

Strike Averted

Increase of 3½ Cents an Hour Awarded to Men on British Columbia Electric Railway

Vancouver, British Columbia, lived for two days, Sept. 24 and 25, under the expectation of having to walk to work on Sept. 26. A board of conciliation, under the industrial disputes act of Canada, had been in session for several weeks, hearing both sides of the case in the controversy between the British Columbia Electric Railway and its men and on Sept. 24, before the board had made any report, the officials of the union announced that the men would go on strike two days later.

The reason given is contained in an ultimatum sent to George Kidd, president of the railway, as follows:

As our representative, R. P. Pettipiece, has withdrawn from the conciliation board dealing with wages and working conditions of the street railway employees because he cannot agree with the other members of the board, we, the members of the joint advisory board of Division 101 Vancouver, 131 New Westminster and 109 Victoria, have no alternative but to carry out the instructions received from the members, and we hereby give notice that a strike will be called of all members of the three divisions to take effect on the morning of Wednesday, Sept. 26, at 5 a.m.

This letter was signed by seven members of the advisory board.

The industrial disputes act of Canada makes a strike on a public utility against the law if the men who are concerned go out before a conciliation board makes its report, and strikers are liable to fines up to $50 each for each day on strike. It is not known that these fines ever were imposed. The union went on strike in a similar way before a board could report in July, 1918.

On Tuesday, Sept. 25, the Mayor of Vancouver took steps to prevent a strike and after prolonged sessions, it was announced in the afternoon that a basis had been arrived at which was satisfactory to all three members of the board and which would be satisfactory to the men. The strike was thereupon called off.

The settlement, as later released by the Department of Labor, Ottawa, gave the motormen and conductors an increase of 3½ cents an hour from 58½ cents to 62 cents. All employees were reduced 10 per cent a year ago and now all others not mentioned above will receive an increase of 2 cents. Motormen and conductors will also receive 20 cents an hour additional when a run is not completed within ten hours of the commencement of the first shift.

The company contended that by the cost of living figures it was entitled to a decrease as wages were already the highest in Canada, although the cost of living was lowest. The men held out for increased pay so as to raise their standard of living, maintaining that $1,900 a year was necessary to keep an average family of five.

Saginaw Promised Service in November

Partial resumption of electric railway service will take place the early part of November, Charles S. Kressler, general manager of the Saginaw Transit Company, recently announced. Auxiliary bus service will start the same time and will gradually be augmented until the complete system is in operation. Track, roadway and overhead construction repairs are now being made and all of the rolling stock is being renewed and will be put in service, Mr. Kressler says, just as soon as it is 100 per cent ready.

Mr. Kressler is getting his organization together as rapidly as possible and has announced the appointment of George E. Cushman as transportation superintendent and Edwin Krueger as track and roadway engineer.

Orders have been placed by the company for bus equipment. The cost of this equipment is $122,000, which is $20,000 more than the company had contemplated expending for buses.

Because of the general breakdown of the jitney company that has provided transportation for Saginaw during the last two years Mr. Kressler will start the operation of street cars just as soon as one complete route is ready. The main route will be opened first for service and others, he says, will follow just as rapidly as conditions will permit. In two years the track, overhead and roadbed have deteriorated. Aside from the special work no new tracks will be laid now because it is impossible to obtain steel deliveries, Mr. Kressler says. However, orders have been placed for March 1 delivery.

Wage Arbitration Opened. — The hearing of the arbitration proceedings on the wage and working agreement of the Middlesex & Boston Street Railway employees has been opened. Charles H. Donahue, a Boston attorney, is acting as chairman and neutral arbiter, with President Pitt F. Drew representing the company and Attorney James H. Vahey representing the employees. According to Mr. Vahey, the men are seeking a wage of 66⅔ cents, a differential wage on the one-man cars; 20 cents an hour extra for snow work instead of 10 cents an hour; the inclusion of all employees under the time and a half rate for overtime; an eight-hour day for all employees. At the present time the average pay is 51 cents an hour for a nine-hour day.

New $100,000,000 Line

Engineer Turner Suggests to New York Commission Construction of Rapid Transit Line to Queens

The New York Transit Commission is considering the project of the construction of a new type of rapid transit line to be built through the center of a 500-ft. parkway, 10 miles long, in the undeveloped section of Queens lying between Flushing and Jamaica. The proposed route is from the west side of Manhattan eastward to the Nassau County border.

The commission a few days ago received an extensive report upon the subject by Daniel L. Turner, its consulting engineer, and has asked Mr. Turner to make additional studies looking to the further development of the idea.

In his report to the commission, Mr. Turner points out that there is no good reason why, in the sections of the city where land is relatively cheap, a rapid transit line may not be made the nucleus of a wonderful parkway line. His plan, as outlined, provides for the 500-ft. parkway strip approximately in the center of which would be the rapid transit line, running either in open cut or at grade, or, where the configuration of the territory demanded it, for short distances as an elevated railroad structure. Allowing about 50 ft. width for the railroad structure, approximately 175 ft. would remain for park treatment on either side, with a 50-ft. allowance for roadway and sidewalks on each side. Taxable values would increase by millions through the construction of such a line.

The route which Mr. Turner proposes is 17 miles in length, of which 4.37 miles would be subway, 1.1 miles under the East River would be in tunnel, 1.65 miles would be elevated railroad and 9.88 miles would be parkway line. The park area would be approximately 450 acres.

The construction cost of this line, Mr. Turner points out, would be $49,200,000. Adding to this the necessary interest, superintendence and administration costs and the equipment cost, the total cost is reached of $99,000,000. To build it as a subway now would cost $120,000,000, and later, in developed territory, much more. The line is proposed to begin as a two-track structure at the Nassau County boundary and extend as such about 7 miles to Seminole Avenue. From this point it will be a four-track line into Greenpoint, where the route intersects the proposed Brooklyn Crosstown line route at Greenpoint and Manhattan Avenues. The line will then pass in two

single-tube tunnels under the East River, but on the Manhattan end, Mr. Turner points out, the line should be three-tracked. Eventually the line could be increased with additional tracks and spurs in Manhattan, additional tubes under the river and an extension of the four-track portion from Seminole Avenue out to the city line, as traffic develops.

Declaring that 27 square miles, approximately 25 per cent of the entire area of the Borough of Queens, is not accessible by any kind of rapid transit facilities, Mr. Turner states that this inaccessible area is largely the region lying north of Richmond Hill and Jamaica and to the south of Elmhurst, Corona, Flushing and Bayside. Most of this territory has no service at all, except that which is provided by the distant elevated lines to the north and south and the lines of the Long Island Railroad.

Queens, however, contains 36 per cent of the land area of the city, but has, with its 8 per cent of the population, only 8 per cent of the total rapid transit mileage of the city. Mr. Turner states that it is obvious that in its next rapid transit building program the city should provide additional rapid transit facilities for Queens Borough.

It is through the center of the open area that he has indicated that such a line should be built, the commission's consulting engineer states, and not into and through a section or sections already heavily built up. For the reason just mentioned he rejects the proposal to construct a line from Jamaica to Manhattan, and asserts that rapid transit lines should be built into undeveloped areas to relieve congestion. Additional lines into congested areas only augments congestion.

Dallas-Denton Electrification Delayed

The hearing has been concluded which was held to consider the motion to dissolve the temporary injunction granted several months ago by Judge Louis Wilson restraining the Texas Interurban Company from proceeding with construction. This company was organized by the Strickland-Hobson interests in Dallas to electrify the line of the Missouri - Kansas - Texas Railway from Dallas to Denton. The order of the court prevented the company from laying a double track on Fairmount Street, in accordance with provisions of the franchise granted by the city of Dallas. Judge Wilson announced that he would not render an opinion in the case for several days. Injunction was sought by the property owners along Fairmount Street, who alleged that the laying of a double-track interurban along this street would greatly damage their property and cause heavy reduction in property values.

Court action has been delaying the electrification of the Katy line from Dallas to Denton, for which plans and estimates have been prepared by engineers for the line, headed by E. C. Brown, chief engineer. It was originally planned to have the electrified line in operation by Sept. 1, but, due to court interference, it is not known now when the project will be completed, or if it will be undertaken at all at this time.

The electrification of the Katy to Denton was to be done by the Strickland-Hobson interests in fulfillment of their promise to the city of Dallas, at the time the franchise was granted in 1914, that two electric interurban lines, each at least 30 miles long, would be built out of Dallas within a specified time. Due to conditions resulting from the World War, extension of time was granted by the city of Dallas. The Dallas-Terrell line was built in fulfillment of the promise for one of the lines and the electrification of the Katy from Dallas to Denton was proposed in fulfillment of the promise for the second line. The electrification project, which it was estimated would cost in excess of $1,250,000, was approved by the city, and the company was preparing to begin construction when court action halted such preparations. Nothing further has been done, and officials of the company say they will await settlement of suit against them before anything further is done.

Sad Leave-Taking in Terre Haute

Employees of the Terre Haute, Indianapolis & Eastern Traction Company, Terre Haute, Ind., recently showed their appreciation for the services of E. M. Walker, general manager, who has left the company to accept the position of president of the Schenectady Railway. At a large gathering a farewell party was staged, at which Mr. Walker was presented with a handsome leather-bound set of the works of Robert Louis Stevenson, and also with a beautiful large silver loving cup. His helpmate, Mrs. Walker, was not forgotten. She was presented with an ivory set of the new Chinese game, "Mah Jongg."

The celebration was a surprise to Mr. Walker, who was not aware that the employees had been making preparations for the big farewell. In his six years' association with the men at Terre Haute they have learned to like him very much and to appreciate his kindnesses to them.

John T. Beasley, president of the United States Trust Company, presented the gifts to Mr. and Mrs. Walker. He said that, despite the short time that Mr. Walker had been in Terre Haute, he had established himself as one of the substantial men of the city; that he had faced a task when he went to Terre Haute that would have discouraged most men.

Mr. Walker, in expressing his appreciation, said the realization that his work was appreciated was one of the things that stirred a man to do all he could.

In referring to Mr. Walker's leaving the company an editorial in the Terre Haute *Tribune* paid a real tribute to his activity as a traction manager. In part that paper said:

> Mr. Walker's methods did not concern the politician. He rather dealt with the makers of new and better cars, and instead of looking for propaganda, he occupied himself with building up an organization among his men and employees generally, the one aim of which was perfect street car service. A spirit of courtesy has marked every branch of the corporation, to such an extent that it has been a matter of comment by visitors to the city, and the company cheerfully has participated in legitimate helpful civic and commercial matters, enhancing the happy relations between the public and the corporation.

Charleston Survey Completed—Increased Fare Recommended

The Beeler organization has completed the survey of the electric railway situation in Charleston, S. C. The report has been in preparation since early in May, when the Beeler organization, at the request of the Charleston Consolidated Railway & Lighting Company, undertook to make a traffic survey of the situation and offer recommendations which it believed would help toward bringing the company back on a good financial basis.

One of the first recommendations, as suggested by the experts, calls for an adjustment in fares, which it considers necessary in solving the problem in that city. It points out that the average rate of fare of eighty-one railways for the first four months of 1923 was 7.13 cents, and the average rate of fare charged in the city of Charleston was 6.02 cents.

In addition to the fare increase recommended, the organization further suggested a modification in the routing of lines, with a few excepted. It recommended the abandonment of certain small portions of the railway system which do not contribute a sufficient amount of revenue to justify their operation. It recommends, further, the complete relief to the company from the cost of paving between the tracks, except where such paving is damaged by the railway in its operations. Faster schedules are recommended on all lines, that the patrons may be given prompt and efficient service. It suggests that, if necessary, relief be granted in the matter of taxation, as has been done in some cities. It brought out the fact that while the number of passengers in 1922 was about the same as the number carried in 1912, the taxes of 1922 had more than quintupled during the last ten years.

Other minor recommendations were made, looking toward the solution of the traffic problem. The report states that substantial savings would be effected in operating costs by the adoption of these changes. It is indicated further that it would be impossible to put the operation of the railway upon a sound financial basis until such time as a substantial increase in the traffic carried could be experienced. It was the hopeful opinion of the engineers who made the report that Charleston was to experience, in its industrial and business conditions, a great improvement, which would be helped along by the changes in car routing and service recommendations.

Active Safety Measure Campaign Under Way in Los Angeles

The July traffic injury record of Los Angeles was broken when reports showed 634 persons were injured, seventeen being killed, as compared with 466 injured in July, 1922. Since Jan. 1, 1923, 310 persons have been killed in traffic in Los Angeles.

The press in Los Angeles during the month of July undertook a campaign of attempting to arouse the people to the need of more safety measures to eliminate dangerous grade crossings and the adoption of improved traffic laws and rules to lessen the loss of human life.

None of the laws in the State is broad enough to enable the Railroad Commission to order a separation of grade of highway and railway lines with respect to fixing the portion of cost to be borne by each concerned. Neither can this adjustment be legally arranged by handling such work under improvement acts and assessing the adjoining property. It rests with state, county and municipality officials to get together with the taxpayers and railroads and work out the desired plan to eliminate these hazards.

D. W. Pontius, vice-president and general manager of the Pacific Electric Railway, said that his company was doing everything possible to prevent accidents at grade crossings; that it had installed along the lines, at 304 crossings, automatic wigwags, and that the company would soon commence the installation of sixty more. The company was arranging to install additional standard crossing signs at 1,000 crossings not so frequently used. He said that he was willing to join in conference and co-operate with the commission, city authorities and the Automobile Club of Southern California in order to prevent accidents between trains and automobiles. His company had agreed to pay its share for the separation of grade crossings along the Los Angeles River, for which the city of Los Angeles voted bonds to the extent of $2,000,000 at the last June election and as soon as he was authorized to do so construction of a tunnel and terminal under Pershing Square would be started at a cost of $4,200,000, and if denied use of Pershing Square, the terminal would be placed on Hill Street between Fourth and Fifth Streets, as originally planned. The building of this tunnel will eliminate twenty-one grade crossings for interurban trains.

Judgments Enacted Affect Oklahoma Utilities

The people of the state of Oklahoma have recently enacted judgments binding upon the public utilities in that state. The opinion states that in all hearings before the corporation commission to fix, raise or lower the rates charged by any public utility, of which the Corporation Commission has jurisdiction, the state shall be considered a party to said action adverse to that of the particular public utility in question and it shall be the duty of the Corporation Commission before it enters an order to fix, raise or lower the rates of this public utility, to enter a judgment finding and fixing the value of the property of the utility.

On the matter of the utility submitting a report on the value of its property, the opinion states that the report when filed shall be considered by the commission as a confession of judgment and upon receipt of the statement the commission shall enter a judgment in an action in which the state shall be the complaining party and the public utility in question shall be the defendant or respondent finding the value of said property as stated in the said confession.

If the Corporation Commission desires to dispute the value of the property the commission shall set the matter for hearing and notice of this hearing shall be given to the public utility. The right to modify the judgment of the Corporation Commission has also been provided in Sec. 4 of the judgment, which states that the Corporation Commission shall have full authority at any time upon due notice to said public utility to modify the judgment provided for in the preceding section, and may modify the same upon application of the public utility after due notice of hearing.

The opinion defined a public utility.

Niles and Company in Controversy

A temporary injunction has been granted restraining the city of Niles from further tearing up the tracks of the Pennsylvania-Ohio Power & Light Company. Court action was started by the railway following the cutting of the track leading to Girard and Youngstown. The tearing up of the tracks came as the result of a bitter fight between Niles and the West End Traction Company, a subsidiary of the Pennsylvania-Ohio Power & Light Company, over the question of repaving Robbins Avenue. The company claims that it is financially unable to pay for this improvement and further that it is attempting to negotiate a new franchise calling for a higher rate of fare that would put the West End company in a position to meet the paving bill. In commenting on the situation President MacCalla of the Pennsylvania-Ohio stressed the fact that he had no desire to abandon railway service through Niles and replace with bus service because he said that buses could not handle volume traffic.

Statistics of the Industry

Census Bureau Gives Out Figures on Passengers Carried in 1922 in Connection with Atlantic City Convention

Although there were approximately 12,000,000 automobiles in the United States last year, the electric railways of the country carried more passengers in 1922 than ever before in the history of the United States Census Bureau. The total number was 15,317,687,212.

This fact was announced on Oct. 6 by the secretary of the American Electric Railway Association, on authority of the Census Bureau, which has just completed a survey of the electric railway operations for 1922. These figures have been released in advance by the Census Bureau for use in connection with the association's convention. They should be considered as preliminary only and are subject to possible correction by the Census Bureau.

The largest number of passengers carried previous to 1922 in any census year was 14,506,914,573, carried in 1917. Thus, 1922 shows an increase of about 6 per cent. The report for 1922 also showed that electric railways operating buses carried about 15,000,000 passengers.

Passengers carried by states in 1922, with the 1917 figures, are as follows:

TABLE SHOWING TOTAL PASSENGERS CARRIED ON ELECTRIC RAILWAYS, BY STATES

	1922	1917		1922	1917
Alabama	80,583,684	84,962,155	Missouri	692,747,054	660,703,957
Arizona	5,776,976	7,893,924			
Arkansas	34,131,000	30,525,360	Nebraska	97,566,736	95,782,721
			Nevada	487,200	890,471
California	935,446,247	638,632,142	New Hampshire	22,270,122	26,341,020
Colorado	100,764,698	102,882,744	New Jersey	484,084,796	555,286,203
Connecticut	209,129,169	249,452,728	New Mexico	1,494,480	1,594,543
			New York	3,311,252,940	2,951,805,264
Delaware	25,889,902	32,648,315	North Carolina	34,206,694	32,140,967
Dist. of Columbia	197,406,744	165,445,889	North Dakota	3,616,069	3,063,647
Florida	49,220,967	38,625,356	Ohio	967,969,914	1,034,245,928
			Oklahoma	42,322,202	35,820,508
Georgia	130,718,221	114,021,766	Oregon	97,246,645	91,926,694
Idaho	3,497,888	3,560,462	Pennsylvania	1,662,796,825	1,520,378,517
Illinois	1,753,500,547	1,665,552,944	Rhode Island	144,960,937	128,220,984
Indiana	262,320,348	231,290,386			
Iowa	110,406,523	119,348,038	South Carolina	22,338,616	28,408,318
			South Dakota	2,273,666	2,105,626
Kansas	43,575,343	46,212,673			
Kentucky	147,490,154	141,218,932	Tennessee	130,767,681	122,655,470
			Texas	229,165,045	184,912,268
Louisiana	164,593,374	134,017,669			
			Utah	39,303,737	47,671,180
Maine	55,575,075	61,789,846			
Maryland	350,024,448	315,969,539	Vermont	7,372,195	9,268,385
Massachusetts	1,058,708,495	1,219,706,121	Virginia	139,049,282	135,411,909
Michigan	576,823,922	593,096,656			
Minnesota	352,464,915	316,904,581	Washington	173,728,486	186,361,737
Mississippi	9,441,459	12,215,749	West Virginia	95,989,610	80,920,697
Montana	17,522,464	25,948,387	Wisconsin	238,963,176	217,599,493
			Wyoming	690,541	1,475,704

Subway Plan Revised

Change in Subway Scheme in Los Angeles Presented to Council by Board of Engineers

Los Angeles engineers have submitted to the City Council alternate plans which provide for the construction of a vast underground railway system with central stations extending from the present Hill Street Terminal of the Pacific Electric lines along three blocks between Fifth and Eighth Streets on Olive Street. This report of the city engineer and the chief engineer of the Board of Public Utilities sweeps aside the many proposed subway system plans that have previously been submitted.

The report further recommends that the proposal previously made for a central terminal under Pershing Square be abandoned, but that the Pacific Electric be permitted to construct under a section of the square in such manner that the present appearance of the park will not be disturbed.

The City Council is urged to appropriate funds for an immediate complete survey for working out detailed plans for the proposed subway system, which is to meet demands imposed by unprecedented growth of the city of Los Angeles and southern California towns. It is outlined that the great need for the subway is evidenced in reports showing that the Pacific Electric Lines are now handling 196,000 passengers daily and the Los Angeles Railway Lines 210,000 daily along routes of a suggested subway system.

The former proposed plans for a Pershing Square terminal are declared completely inadequate; that the capacity of such a system would not be sufficient even by the time this project would be completed.

It is cited that the advantages of this proposed plan is with a view of more than doubling the downtown station capacity, in addition to assuring the preservation of Pershing Square Park, as well as establishing a grade for the immediate construction of the Hollywood tunnel. As preliminary steps, the report states that the Pacific Electric must acquire a new right of way through the Hollywood district, and the City Council must take measures to cause the city charter to be amended to permit construction of subways in any streets or alleys at any levels consistent with efficient operation.

The report also included a city-wide subway system plan which would enable the Pacific Electric lines to route a large part of its interurban traffic from the center of the city along underground channels. The plans outlined that four main projects be built soon.

In view of the fact that a short stay of time is necessary to work out the detailed plans of the Olive Street subway stations, the city is urged to obtain from the State Railroad Commission a stay of its order requiring the Pacific Electric to construct its subway from First and Glendale Boulevard into the present Hill Street terminal at grade, the extension not to exceed ninety days.

The report further contains recommendations that the vast subway system care as far as possible for local traffic.

Wants Privilege Accorded Seattle Municipal Railway

The Seattle & Rainier Valley Railway has served notice on the city utilities committee of the City Council that it will request the city of Seattle to abolish the gross income tax levied against the company under its franchise and also the requirement that the line carry policemen and firemen without charge.

John C. Higgins, counsel for the company, appeared before the committee to oppose a Council bill requiring the company to pave its right-of-way in Rainier Avenue between Graham and Morgan Streets, saying the company had laid planking several years ago, which is still in good condition, and that the Council in 1917 had relieved the company temporarily of the paving obligation, except in certain blocks.

The company's counsel explained that free transfers were now being given on the line and that it was accepting school tokens the same as the municipal railway. In consideration for these concessions, he said, the Rainier Valley line should be treated on a parity with the Municipal Railway as to paving. Mr. Higgins stated that the free transfers and school token privileges are costing the company 39 per cent of its net revenue and that the company is not earning a profit.

Co-operation Sought for Houston-Seabrook Interurban

All contracts involving the city of Houston, the Houston Electric Company and the Galveston-Houston Interurban Company relating to the construction and operation of an interurban electric line from Houston to Seabrook, a resort on the shore of Trinity Bay, have been executed, according to a statement made public by the trustees of this undertaking. The trustees appeal to the citizens of Houston to cooperate to the end that construction may begin soon after Oct. 1, 1923, as provided in the articles of agreement by which the undertaking was launched.

The purpose is to incorporate the Seaboard Electric Railway to construct and operate an electric interurban railway from Houston via Harrisburg, Pasadena, San Jacinto Battle Park, Morgan's Point, along the Houston Ship Channel, and thence along the bay shore to Seabrook. The company will have an authorized capital of $2,000,000, consisting of 10,000 shares of 7 per cent cumulative non-voting preferred stock of the par value of $100 a share and 10,000 shares of common stock of the par value of $100 per share. Of this company it is provided that John H. Kirby, W. C. Munn, John S. Bonner, J. M. West, J. S. Rice, I. A. Cottingham, and Jacob F. Wolters will be among the initial directors.

Railway Ethics Compulsory in Cape Breton

A twentieth century version of the beatitudes was recently given out by the Cape Breton Electric Company, Sydney, N. S., and distributed in circular form to the passengers of the line. The company seeks to relieve congestion in railway traffic and the circular, as a way of doing this, is attracting much attention. The circular reads as follows:

He who spreads himself out across the aisle shall be humbled and he who strives to make room for his fellow men shall be exalted.

Blessed is he who giveth up his seat to a lady, but scorned shall be he who hideth himself behind his paper.

He who standeth upon the platform and emitteth poison gas from a noxious weed is an abomination unto his fellow passengers.

The wrath of many who wait shall descend upon the head of him who hath not his fare ready.

A wise one is he who goeth forward in the car, for he shall be rewarded with a seat.

Blessed are those who have their transfer unfolded, for by such is the service improved.

Abandons Pleasure Park Plan

The Philadelphia Rapid Transit Company has abandoned its plan for an amusement park at Sixty-third and Market Streets, Philadelphia. The property has been ordered sold by the owners, the Willow Grove Amusement Park Company. After much opposition to the plan voiced by residents along the way, legal action was taken, with the result that Judge Johnson handed down a permanent injunction against the railway forbidding it to establish a pleasure resort on the ground that it would constitute a nuisance to residents of the community. It was decided not to appeal.

A Story with a Moral

Honest business men can become blackguards and crooks in the eyes of the public if they enter the public utility field. Just what the attitude of people in general is toward utilities and their operators is aptly expressed by W. M. Maupin in a recent editorial in the Gering (Neb.) *Mid-West*. "The Story of Three Men in a Fix" related the experiences of Plodder, Figgers and Smithers, who, with extraordinary perseverance, became the most respected and beloved business men in Billville and after amassing a fortune settled down to a life of ease and comfort. They were too ambitious for that kind of a life, though, and set to work to perform their greatest achievement—to give the residents light, power and a transportation system. They organized the Billville Electric Railway, Light & Power Company and in a few years made Billville a real city, the epitome of industry. But how they stood in the community now was a very different story. As individuals they were respected and admired, but as public utility operators they were condemned and despised. The moral of this, in the opinion of the writer, is "Don't it just beat hell?"

Official Improving.—The condition of George L. Maltby, general manager of the Jamestown Street Railway, Jamestown, N. Y., who has been dangerously ill, continues to improve steadily and his friends look for a speedy recovery.

Compromise Agreement Reached.—A wage compromise between the Board of Works and the platform employees of the San Francisco Municipal Railway provides for an increase of 40 cents a day. The new scale is retroactive to Sept. 16. The men had asked for $1 a day increase, and under the new arrangement will be paid $5.40 for an eight-hour day.

Asks $576,706 for Bridge Operation.—Commissioner Whalen of the Department of Plant and Structures, New York, N. Y., in a supplementary budget has asked for $576,706 for operating the Williamsburg bridge trolley system. Of this amount $320,870 is for personal service and $203,931 to operate trackless trolleys, of which $113,108 is for personal service.

Nutshell Economics to Appear.—In the weekly "Service Talks" of the Philadelphia Rapid Transit Company a series of discussions has been started under the heading "Nutshell Economics." The first appeared in the Sept. 12 issue of the pamphlet and was called The New Era in Labor. The article tried to show the difference in attitude between capital and labor today and fifty years ago.

New Slogan in St. John.—The New Brunswick Power Company, operating the street railway in St. John, N. B., has turned attention to the education of public sentiment. The company has started an advertising drive, with the slogan of "Assured Service." A recent bulletin says: "We appreciate your patronage. Let us make it reciprocal. We are always at your service. Thank You. We are on the job twenty-four hours a day."

Mr. Chapin Entertains Railway Men.—Each year for a number of years past Edward H. Chapin of Rochester, vice-president of the National Car Wheel Company, has given a summer outing and dinner at his beautiful summer home at Geneseo, in honor of the officers and department heads of the New York State Railways, Rochester Lines. This year the event took place on Sept. 27. After gathering at Conesus Lake there was a dinner at East Avon. About a hundred guests were present.

Men on Strike.—Trolley service has been at a standstill in Mahonoy City since Oct. 2, when motormen and conductors employed by the Schuykill Railway went on strike because the company refused to accede to their demands for an increase in wages amounting to 10 cents per hour. The company had asked the men to accept a decrease of 5 cents per hour, and later came back with a counter proposition to "split the difference" and agreed to add 7½ cents to the minimum rate per hour, which is 50 cents.

Foreign News

Le Havre Replaces Cog Railway with Moving Stairway

Throughout Europe, as in many places in the United States, there have been established funiculaires, or cog, railways, climbing from some low level to a neighboring height. A new suburban development at Le Havre, on the Norman coast of France, has gone one better and suppressed the very thought of the funiculaire by a project for the installation of a magnified moving stairway of 300 steps. There will be two sets, one going up, the other going down, the motive power being electricity. The steps, or *paliers*, will each be wide enough to take a baby buggy or a bicycle. There is nothing especially new in the idea, but there is in its application, and the Compagnie de Tramway Funiculaire at Saint Adresse saw here at Graville the opportunity of giving a similar service at a less cost of operation and a no greater cost of installation. Nothing is said of upkeep in the sense of repairs or replacements. It would seem, however, that this is a factor which should be given due consideration. Operating and upkeep figures after a term of years as compared with those of the neighboring funiculaire will make interesting reading.

The proposition came from an Alsatian engineer.

Genoa, Italy, to Have Underground

A new company has been formed at Genoa, the Societa Metropolitana di Genova, for the construction and exploitation of an electric underground railway running from Sampierdarena on one side of the city to Quarto on the other side. The line is to be so built that it may be extended as occasion may require, at ground level.

The company is capitalized at 5,000,000 lire, all paid up and in the hands of the promoters. The charter provides for an increase of the initial capital to 80,000,000 lire. The promoters of the enterprise are the Marquis Stefano Cattaneo Adorno di Luigi and the engineer, Emilio Rava. Aside from these, who are Italians, the rest of the principal stockholders are Spanish.

The "engineer-president" of the company is Senor Roberto Farjon y Farjon. His staff of associates are all Spanish.

The *Critica*, the organ of the railway and transport interests, announces that this group of Spanish capitalists forms a part of the consortium which is carrying out the subway projects of Madrid and Barcelona, and that its participation in this Genoa project marks its first venture into foreign fields.

Dr. Charles A. Beard Will Aid in Reconstructing Tokyo

Dr. Charles A. Beard, economist and authority on municipal government, has left for Japan to aid in the rebuilding of the ruined cities. Dr. Beard goes as a representative of the Bureau of Municipal Research. Dr. Beard was invited by Viscount Shimpei Goto, Minister of Home Affairs, to help in the reconstruction of the devastated territory. The bureau will meet all the expenses of his mission. Dr. Beard, speaking on questions of transportation, said that three subway companies had been organized in Tokyo before the earthquake, but that he did not know what effect the disaster would have on subway construction. He said the plan would be to enlarge the city of Tokyo to seven times its present area, so as to include all the outlying districts. He said that a conference had been held with the New York City Planning Committee of the Russell Sage Foundation to discuss reconstruction plans. It was his belief that there would be some difficulty in reconciling the views of the Japanese conservative element and the younger progressives in planning reconstruction.

©Wide World

Ginza Avenue, Tokyo's Fifth Avenue, After the Fire and Flames Had Subsided

Financial and Corporate

"Stew in Their Own Juice"

Court So Declares of Some St. Louis Bondholders and Moves to Lift Receivership

Lifting of the receivership and a forced reorganization of the United Railways, St. Louis, as an immediate prospect are indicated through a decision handed down by Federal Judge Faris on Sept. 29. On that date the court denied the receiver's application for extensions of three underlying bond issues totaling $4,100,000 and two bond issues of the St. Louis & Suburban Railway, a constituent company, totaling $6,500,000.

Default in the payments due on Oct. 1 on these bond issues automatically brings about a default in the $30,000,000 issue of United Railways general 4s, which otherwise would not mature until 1934. Attorneys of the Suburban group of bondholders announced that they would institute foreclosure proceedings before Oct. 6.

Confusion exists among the various groups of security holders. Following Judge Faris' decision, there were conferences late Saturday and over Sunday, and efforts were made to get in touch with the bond and stock holders. The Suburban group has announced that it had offers from outside interests to segregate and take over the lines covered by the mortgages on that property. Others contend the Federal court and the Missouri Public Service Commission will never consent to disintegration of the system.

In handing down his decision Judge Faris said:

> The questions involved are whether the receivership, which has been here for four and a half years, should not be terminated and whether the Suburban bondholders should be forced—to use the vernacular—"to stew in their own juice," taking 4 per cent while others more favored are able to get extension after extension from month to month and year to year, at 8 per cent or better.
>
> It is inequitable, it is unjust, it is unthinkable. This case has been here long enough, and the facts, as they present themselves to the court, induce me to reach the conclusion that I ought not to order these extensions. Concerning the issuance of additional receiver's certificates—there are enough receiver's certificates at issue now. The foreclosure and the reorganization would rid the company of much underbrush and the new company will be able to begin life under much more favorable skies.

The underlying bond issues for which three-year extensions were sought were Lindell Railway, Cass Avenue & Fair Grounds, Compton Heights, Union Depot & Merchants Terminal, and the Suburban. The Suburban lines were the last to enter the United Railways system. Prior to 1906 they were operated separately from the United Railways. One of the Suburban bond issues of $2,000,000 matured April 1, last, and the six months grace period expired on Oct. 1. On the same date the two other issues totaling $4,500,000 matured. The Suburban lines are the present Hodiamont, Sarah Street, Union, Manchester, Meramec and Kirkwood-Ferguson. The Hodiamont is an east and west line through the heart of the city and much of the distance is through its own private right-of-way.

Attorneys for the Suburban group, who alone opposed the bond extensions, declared they did not want segregation, but did want foreclosure and a reorganization. They indicated, however, that segregation might become necessary. Attorneys Jeffries and Early stated that their foreclosure petition would be filed not later than Oct. 6.

The Suburban interests contended that when the receiver recently invited financial interests to underwrite the various bonds and the proposed extensions he received proposals for underwriting the underlying bond issues, but none to underwrite the Suburban issues. It was to this matter that Judge Faris referred when he said the Suburban group were left to "stew in their own juice." Attorney Jeffries would not hazard a guess as to how much time will be required to bring about a reorganization. After foreclosure it will be a matter for the security holders to pass on, subject to approval by the court and the Public Service Commission.

City's Stand Alters Case

Receiver Wells declines to discuss the decision by Judge Faris. In the opinion of others, however, a reorganization would have taken place months ago had it not been for the fight the politicians made upon the valuation. When the Missouri Public Service Commission decided the property was worth $52,000,000 the city appealed, and then the company also appealed. It might have been possible to reorganize the property on the $52,000,000 valuation, but in view of the city's fight the case now is on its way to the United States Supreme Court. The underlying and junior bonds total $50,690,000, and in addition there are receiver's certificates outstanding of a total of $4,200,000. The satisfaction of these claims in full would leave nothing for the stockholders. The preferred stock totals $16,383,000, and the common stock $24,913,000. A majority of the common stock is held by the North American Company and is carried on the books of that company at $1. The North American Company, however, is the owner of substantially all of two of the underlying issues—$1,474,000 Lindell Railway first 4½s and $1,640,000 Gass Avenue and Fair Grounds Railway first 4½s—and has expressed its readiness to extend beyond Oct. 1 their present maturity dates.

Just two days before the decision by Judge Faris, the Missouri Public Service Commission announced that a conference of all interested parties would be called with a view of hastening a reorganization of United Railways. In the light of subsequent events it is not known whether the commission will insist upon a conference. In the meantime the commission had approved the receiver's request that the underlying bonds be extended, and that $4,200,000 of receiver's certificates be issued. A formal statement was issued as follows:

> The commission feels that a reorganization of this property should be effected as soon as possible. The expenses necessarily incident to the receivership are very great and inevitably impose a constantly increasing burden to the system, disadvantageous both to the property and to the public. The commission has no power directly to bring about a reorganization, but it desires to do all it can to effect that result. A conference of all the interested parties will therefore be called for an early date looking toward a hastening of reorganization.
>
> The question of reorganization was discussed before the commission on Friday in connection with the receiver's application for permission to extend the maturity date of the bonds. Morton Jourdan, representing the North American Company, said the company had submitted a reorganization plan some time ago, but nothing came of it. Receiver Wells said he had tried to work out a reorganization plan, but had not met with success.
>
> It was evident at the hearing that the security holders of the St. Louis & Suburban Company would like to see that property, which includes the Hodiamont line, separated from the main system and left to work out its own salvation. It was likewise clear that the receiver and the North American Company will oppose any plan of reorganization which provides for separating the various street railway lines which now form the system.

The protest filed by the attorneys representing bondholders of the Suburban Company against the extension of the maturity of the $4,100,000 bonds was not mentioned in the statement by the Public Service Commission. One of the points advanced by the Suburban bondholders was that an extension of the underlying bonds would tend to delay the reorganization. They also claimed that the fact that the United Railways is not satisfied with the valuation of the property as fixed by the commission is no justification for the continuance of the receivership.

The commission also said:

> It is necessary, therefore, for this commission to act at once upon the application. The receiver and other parties have represented to the commission, that if this plan [for bond extensions and receiver's certificates] be not allowed to be carried out, dismemberment of the present railways system in St. Louis probably will result. The City Counselor of St. Louis has joined with the receiver in urging upon the commission the approval of the application. The holders of practically all of the securities have urged upon the commission the desirability of this course. There has also been filed with the commission the recommendation of Judge Henry Lamm, special master under appointment from the Federal court, recommending the authorization prayed for by the receiver.
>
> The commission has decided to grant the application in view of the various representations made to it by the interested parties, including the city of St. Louis, and in view of the emergency requiring immediate action. Accordingly an order has been issued approving the application.

All of which was nullified by the decision of Judge Faris.

$155,491,555 of Issues Approved in Ohio

Security issues totaling $155,491,555 were authorized by the Ohio State Public Utilities Commission during the year ended July 1, 1923, for the purpose of continuing, extending and improving public utility services for the people of this State. That is one of the high

lights in the report of the commission's work, just issued.

Of the capital security issues authorized by the commission, $96,286,334 represented bonds and notes, while the amount of stock totaled $59,205,220. The commission in its report also points out that during the year its bureau of rates and service had before it 1,206 informal complaints, of which 1,138 were adjusted to the satisfaction of both parties. In fifty-five proceedings filed by shippers of freight for overcharges, the commission ordered refunds amounting to $55,438.56.

During the year 243 formal orders were issued by the commission and forty-nine supplemental or modifications of previous orders were promulgated.

Among the numerous matters acted upon by the commission in the year were 112 applications to approve new capital expenditures, fifty-six applications for property transfers, involving a money value of $51,546,929, thirteen applications to abandon public utility services, sixteen appeals from rates fixed by ordinance in municipalities, forty-three complaints against utility services being rendered, and hundreds of other matters involving such things as safety gates at railroad crossings, rules and regulations for overhead and wire crossings, extensions of passenger train service, orders regarding coal car supply, and thousands of other details referring to filing of schedules and investigations, etc.

Reorganization Requirements of B.-M.T. Met.

With the sale of approximately $4,500,000 in shares of stock of the Brooklyn-Manhattan Transit Corporation to private buyers, the $26,000,000 required under the reorganization plan has been paid into the new company.

In the official statement issued by Gerhard M. Dahl, chairman of the executive committee of the corporation, he said:

> Brooklyn Rapid Transit Company Underwriting Syndicate will be terminated successfully Oct. 5. Eighty-two per cent of the stockholders paid their assessment and received therefor the new securities provided for by the plan. The balance has been placed privately and the syndicate subscribers relieved of their liability.

The syndicate, headed by the Chase Securities Company, was opened on March 15 and underwrote the $26,000,000 to be paid in by the stockholders under the reorganization plan. The payments were made by the stockholders in three installments. The time expired several weeks ago in which the holders of the stock of the Brooklyn Rapid Transit Company were authorized to purchase the shares of the Brooklyn-Manhattan Transit Corporation.

The $26,000,000, which has been paid into the company through the assessments as the result of the reorganization plan, is to be used in providing cash requirements, and $5,000,000 in capital requirements, a part of which has already been appropriated for the purchase of new equipment.

Denver Fare Case Closed in U. S. Court

In the United States District Court of Colorado A. L. Drum of A. L. Drum & Company, Chicago, closed the case of the Denver Tramway, which has been in progress since March, 1923, before Special Master Henry A. Dubbs, appointed by the United States Court.

This is the first large street railway system to conduct a confiscation case originating in the United States Court, necessitating the presentation *de novo* to the court of all details of inventory and valuation with detailed testimony as to the principles of valuation adopted with respect to the basis of reproduction costs, depreciation and the cost of development as measuring the going concern value of electric railway properties. Usually the valuations are fixed by the public service commissions and reach the Federal court only on appeal. The decision in this case by the court will, therefore, be of great interest to all other electric railways.

In the JOURNAL for June 9 details of the valuations prepared by A. L. Drum & Company were printed. These valuations which were submitted summarize as follows:

SUMMARY OF COST OF REPRODUCING AND DEVELOPING THE DENVER PROPERTY AS OF DEC. 31, 1922

	Present-Day Cost Prices Current Dec. 31, 1922	Three-Year Average Cost Average Prices 1920-1922
Total physical property	$27,330,568	$29,071,181
Going concern value...	4,000,000	4,000,000
Water rights.....	290,662	290,662
	$31,621,230	$33,361,843

Dr. Delos F. Wilcox, retained by the city of Denver, submitted valuations summarizing as follows:

	Normal Reproduction Cost Basis	Reproduction Cost at 1922 Prices
Total cost, new.....	$12,051,260	$16,997,710
Total cost less depreciation.....	7,215,229	9,356,454

The company has been operating under an 8-cent fare with a 7½-cent ticket fare since March, 1921, under order of the Federal court, and the city is endeavoring to have this fare reduced to 6 cents, which the company contends will be confiscatory.

Arguments by attorneys for the company and the city will be heard on Oct. 8 by the master.

Auction Sales in New York.—At the public auction rooms there were no sales of electric railway securities this week.

Receivership Application Dismissed.—Vice-Chancellor Backes has dismissed the application of William Harris for a receivership for the Public Service Railway, Newark, N. J.

Authorizes Preferred Stock Issue.—The West Penn Company has authorized an issue of $50,000,000 of 7 per cent cumulative preferred stock and has afforded holders of its 6 per cent preferred stock an opportunity to convert share for share into the new 7 per cent preferred stock. This privilege has also been extended to preferred holders of the West Penn Railways.

Reports Surplus. — For the twelve months ended Aug. 31, 1923, the North American Company, including subsidiaries, reports a surplus of $13,701,719, after taxes, interest and preferred dividends, but before consideration of depreciation, which was equal to $5.65 a share on 2,426,464 shares of common stock.

Another Move Against "L" Consolidation.—The preferred stockholders of the Chicago Elevated Railways have filed a petition with Judge Hugo M. Friend in the United States District Court asking for a temporary injunction to restrain company from selling $14,000,000 stock certificates. Argument on the petition will be heard on Oct. 9.

Authorizes Trust Certificates. — The San Diego Electric Railway has been authorized by the California Railroad Commission to issue $712,000 of 6 per cent equipment trust certificates and to execute a mortgage as security for the payment thereof. The equipment to be purchased with the proceeds of this issue includes fifty double-end, double-truck, four-motor electric street cars and ten Fageol coaches, costing $950,000. The order for the cars was placed some months ago and was referred to in the ELECTRIC RAILWAY JOURNAL, issue of April 21, 1923.

Funding Bonds Offered.—Hill, Joiner & Company, Payne, Weber & Company and Halsey, Stuart & Company, Inc., are offering at 97 and interest, to yield about 6¾ per cent, $1,150,000 of first lien and refunding mortgage 6½ per cent gold bonds of the Eastern Wisconsin Electric Company, Oshkosh, Wis. The bonds, known as series B, are dated Sept. 1, 1923, and are due Sept. 1, 1948. The proceeds will be used towards the retirement of underlying bonds amounting to $1,182,000 of the Eastern Wisconsin Railway & Light Company's first mortgage 5s. due Oct. 1, 1923.

No Revision in Exchange Plan.—In a recent letter sent to the shareholders of the Quebec Railway, Julian C. Smith, president of the Quebec Power Company, states that the holders of the Quebec Railway, Light, Heat & Power Company need expect no change in the basis of exchange for shares of the Quebec Power Company when their concern is taken in. He says that the management of the Quebec Power spent many months in study and examination with a large staff of experts in order to arrive at a proper value for the income bonds and shares of the Quebec Railway and that nothing has developed since which would in any way modify the conclusions arrived at. He therefore advises the shareholders that the management of the Quebec Power will make no change in the offer which was contained in its letter of July 26, 1923. The financial conditions under which the companies are to merge have been outlined previously in ELECTRIC RAILWAY JOURNAL.

Traffic and Transportation

Mr. Dalrymple in Chicago

Interesting Side Light by Glasgow Manager on British and American Methods

James Dalrymple, general manager of the Glasgow Municipal Tramways, who was brought to Chicago by ex-Mayor Edward F. Dunn in 1905 to give his opinion of municipal ownership of the street car lines, has been in Chicago for the past two or three days inspecting the surface lines and conferring with the Mayor. The corporation of Glasgow sent Mr. Dalrymple to America and Canada this time to collect ideas, information and data of benefit to its tramways.

Mr. Dalrymple has visited Montreal, Vancouver, Seattle, San Francisco and Los Angeles and will inspect the Detroit municipally operated street cars on his travels from Chicago to the East. He plans to attend the American Electric Railway Association convention in Atlantic City.

It will be remembered that Mr. Dalrymple was very much opposed to municipal ownership for Chicago eighteen years ago, giving as his reason that politics would interfere too much with such operation. The Glasgow manager did not express himself at this time relative to whether or not he thinks Chicago is now ripe for municipal ownership. He gave some very interesting statistics on the Glasgow Tramways which make it possible to arrive at some comparison between his property and properties here in the United States on which municipal ownership is advocated.

Average Haul 1.9 Miles

Operating 209 miles of single track in the city of Glasgow, the average fare is 2.58 cents, and the cost of operation per passenger 1.8 cents. In the fiscal year of 1922 296 rides were made per capita, while the passengers per car-mile were 15.5. Some idea of the size of the property may be gained from a comparison of the average haul per passenger, amounting to 1.9 miles in Glasgow, against 4.16 miles on the surface lines in Chicago and 6.95 miles on the elevated of Chicago. The Chicago Surface Lines give a ride of 35 miles for a 7-cent fare as compared with a 6.84 mile haul for a corresponding 7-cent fare in Glasgow.

A zoning system of fares introduces rather a complicated system of fare collection necessitating the conductor or collector making a continual trip among the passengers collecting the zone ticket, as a zone limit is reached. This difficulty is partially overcome by the fact that the capacity of all the cars in Glasgow is limited to six standees. Mr. Dalrymple said that with the American methods of fare collection the conductor did not come in contact with the passenger often enough.

Eighty-four per cent of the people in Glasgow, which means 84 per cent of the 417,000,000 passengers hauled a year, pay 3 cents or less per ride, and due to this low fare and the fact that the residence district is located very near the central manufacturing or business district, the noon peak load is as heavy as the morning or evening peak. This can be easily accounted for when it is realized that the Glasgow Tramways serve 30 square miles as compared with 200 square miles of the Chicago Surface Lines. Three thousand seven hundred trainmen are employed to serve the double-deck cars. Their wages average $16 per week. The average wage of the 5,600 trainmen in the transportation department of the surface lines is $34 a week.

New Fare Plan in East Liverpool Will Effect Time Saving

A new system of fare collection will shortly become effective on the Steubenville, East Liverpool & Beaver Valley Traction Company, East Liverpool, Ohio, between Wellsville and Midland. If the plan proves satisfactory, it will be introduced on other local lines as well as the Steubenville-Beaver Interurban system.

Under the new scheme, as devised by Superintendent of Transportation M. T Montgomery, passengers, instead of depositing money in the fare box, upon entering the car, or paying upon leaving the car, will purchase tickets from the motorman. By indicating their destination, they will receive a ticket on which is stamped the amount of fare which they have paid. This ticket is held by the passenger until he leaves the car, and then will be deposited in the fare box. The motorman will know whether the passenger is leaving the car in the zone to which his fare has been paid by the color of the ticket. Ten sets of tickets will be used on the main line and will be arranged in front of the conductor, so they can be readily detached as the passenger enters the car. The register will return the correct change to the passenger, which will save time which is usually required in sorting the change from the fare box. Special provision is made for student tickets, which will be good for forty-six trips per month and will be sold from and to all points on its lines at the rate of 1½ cents per mile or fractional part thereof.

While a receipt system has been in effect on the interurban system, the plan, as worked out by Superintendent Montgomery, is practically new on the city lines. The system is patented and will be put into effect just as soon as the tickets can be printed and holders provided.

Omaha Fares Unchanged

Commission Decides Seven-Cent Fare Shall Continue for an Indefinite Period

Citizens of Omaha who make use of street cars need expect neither a reduction nor an increase in carfare, according to a report issued by the State Railway Commission. Although the commission finds that the Omaha & Council Bluffs Street Railway has failed to earn 7 per cent on a valuation of $13,800,000 set by the commission, it has approved the present schedule of rates for an indefinite future period, "the company indicating its willingness to continue the effort to make present rates meet the necessities."

Opposes Accounting Methods

The statement of the railway commission was in part as follows:

> The company made claim to a value of its physical property and working capital in amount of $23,301,177, using price levels of 1919 in arriving at the result. It set forth a value of $19,915,254 for its physical property, using average prices of 1916 to 1919. It claimed a value, after allowing depreciation, of $21,466,772 for its physical properties and laid claim to additional intangible value of $1,825,000, making total valuation of $23,291,772, on which it was alleged it was entitled to a fair return.
>
> The commission's engineering department found that the fair cost of the properties to the company, plus necessary working capital, had been $11,317,618, and that the fair experienced cost of the company, depreciated to meet the present condition of the plant, was $8,600,000. The commission's engineer testified that his figure did not represent fair value because he had not added to it anything for increased price level or for intangible elements recognized by the courts. He left those facts for the commission to consider.

The opinion also criticises the method by which the company has kept track of the changes in its property in the last twenty years. The company is notified that it will soon be called upon to amend its accounting practices in certain unnamed respects.

The commission also finds that at the time of the reorganization of the Omaha & Council Bluffs Street Railway in 1889 securities were issued which did not represent property brought into the consolidation or payments of cash for the securities. The commission holds there is no warrant for the assumptions of the company that the property was worth the sum of the bonds and preferred stock at the beginning of 1903.

R. A. Leussler, vice-president and general manager of the railway, said:

> I am very much disappointed in the decision. The company clearly showed the value of its property to be much more than the figure found. The commission found the company entitled in the last three years to approximately $1,000,000 in return more than it earned. The company attempted, from its books, to show that the experienced cost of constructing the plant had been not far from $21,000,000. Elaborate exhibits were presented to prove the point. The commission rejected the evidence as entirely unfounded.

The final step in the evolution of the financial history of the railway came in 1902, when there was a further reorganization and the injection of eastern capital. All the properties west of the river were owned by the Omaha Street Railway and came into the new reorganization which brought in also a long time lease of the properties in Council Bluffs, Iowa, and the toll bridge

across the Missouri River, which was owned by the Council Bluffs corporation. Concerning this financing the commission says:

> The Omaha Street Railway came out of the period of reorganization and with bonds somewhere between $1,500,000 and $2,250,000. Most of its property was at the retirement stage due to obsolescence, this property including inadequate horse cars, horse car roadway too light for electric lines, a large number of horses necessarily disposed of when the lines were electrified, and the power plant and cable of the Cable Tramway.
>
> By canceling out the bonds common to the old and new companies we find that the process of reorganization had transformed $5,000,000 of common stock, $4,000,000 of preferred stock, and $4,850,000 of refunding bonds. The properties had gained $1,470,000 in cash and the lease of the Council Bluffs properties. Nothing in the record indicates the price at which the bonds were marketed. If they sold as low as 80 and the Council Bluffs lease were brought in at a value of $1,000,000 to those who had it to offer the common stock in the predecessor company was ultimately represented in the new company by an equal amount of common stock, $60 of preferred stock and $60 in bonds. Efforts to secure an accurate statement of the terms of consolidation failed and the records of the present company's office do not seem to contain the data.

The proceedings, which this finding of the commission is presumed to conclude, began in 1918, with an application on the part of the railway for an increase in fares as an emergency. The commission denied the application on the ground that no emergency existed. An appeal was taken to the Supreme Court of Nebraska, and in July, 1919, the court reversed the commission and ordered it to grant emergency rates to last until the commission had ascertained the value of the company's properties and had made a rate based upon that value and the necessary operating expenses. The commission soon issued orders to increase the fare to 7 cents. The valuation of the properties, the taking of testimony, and the reaching conclusions have covered a period of almost three years.

Corporation Counsel W. C. Lambert, who represented the city, was quoted as follows:

> While no reduction in fare has been obtained, a figure has been set by the order, much less than the company claimed as the value of the property which will be of great advantage in all controversies over rates in the future.

The order specifies that as conditions change, the board may make changes on its own motion or through application of interested parties.

Conducts Traffic Survey

In order to improve its service and to be able to take better care of the car needs of a rapidly growing city, the Georgia Railway & Power Company, Atlanta, is conducting an unusual survey of traffic conditions in Atlanta. Uniformed attendants of the company are riding on the street cars and interurban cars with the passengers, asking a series of questions of many hundreds of the company's patrons in order to obtain first-hand information as to what the Atlanta public desires in the way of street car service and improvements. The company plans later to take action in the more important matters thus learned from the public.

City Restrained

A Permanent Injunction Has Been Granted Preventing the City of Youngstown from Interfering with Buses

Judge Lyon at Youngstown, Ohio, has granted a permanent injunction to the jitney association preventing the city from interfering with loading or unloading in Central Square.

The jitneymen say that if a new ordinance is passed and upheld in the Common Pleas Court they will carry the case to the Supreme Court.

In his decision, Judge Lyon pointed out that section three of the ordinance gave the director power to make regulations under authority given him by section two. This, Judge Lyon said, was evidently a mistake, as section two only defines the boundaries of the congested district. The court is of the opinion that the reference should have been made to section one, which authorizes the director of safety to regulate traffic in the congested area. Without authority to enforce regulations by the director, the ordinance is worthless, the court held.

COURT REBUKES COUNCIL

Judge Lyon took occasion to score City Council for its action in attempting to give such wide authority to an administrative officer. He said that all decisions from the Supreme Court have been against such practice. He called attention to the fact that the director of safety was authorized to make regulations that should properly have been a part of Council's duty.

In passing on the case, Judge Lyon said if it had not been for the mistake in drawing the ordinance, he would have had to uphold it, much as he would have disliked to do so, as Toledo passed a similar ordinance some time ago and it was upheld by the courts, and this decision would have been binding on the court in the present case.

The suit was brought by John Hogan in behalf of the jitney operators following the issuing of an order by Safety Director Hamilton, barring jitneys from the congested district. This order was issued on authority of an ordinance passed by Council in July.

The order applied to buses of the Pennsylvania-Ohio Electric Company as well as jitneys and the traction company had worked out a plan for loading buses just outside the congested district boundaries. This plan, however, did not have to be put into effect when the temporary injunction was granted.

The attack on the order by Hamilton was based on the ground that Council had no right to pass an ordinance depriving jitney owners of the right to use the streets. The arrest of Hogan for loading his jitney in Central Square, which brought about the test case, was also attacked on the ground that it was based on the wrong law.

The city, on the other hand, defended its position on the ground that a previous ordinance had barred jitneys from Central Square and they had been allowed to go back only by tacit agreement to ignore the law; hence the new order was not taking away any rights that the jitney owners legally possessed, the city contended.

While the case was before the court, the new state law, placing jitneys under regulation by the Public Utilities Commission, went into effect. Jitney association officials say this takes away from the city all power to regulate the buses and another lawsuit to test this point is expected.

Denies Fare Increase.—The Illinois Commerce Commission dismissed a petition of the Chicago Elevated Railway asking for a reduction in fares to Evanston, Wilmette, Oak Park and other suburbs. Commuters, temporarily at least, will pay the prevailing rates.

Extends One-Man Car Service.—The Worcester Consolidated Street Railway is making extensive additions of one-man cars to its lines, both city and suburban. Seven have been put into service on city lines which have never had that type of car before. One-man car service had also been started between Worcester and Leominster, a line of 20 miles.

Approves New Rates.—The Public Service Commission has approved a tariff providing numerous changes in local passenger rates applying between all stations on the New York state lines of the Olean, Bradford & Salamanca Railway, effective Oct. 8. In general, increases are made in interurban fares (fare basis increased from 4 cents to 4.5 cents per mile), commutation fares, baggage charges and special car rates. Present mileage book rates are canceled. Provision is made for the sale of monthly school tickets (forty-six single trips) at one-half the regular one-way fare.

Decision Postponed.—The New York Transit Commission recently announced that it had postponed its decision until October, 1924, although it was favorably inclined to change the Thirty-third Street station on the east side subway of the Interborough Rapid Transit from a local to an express stop. The commission says that it has in view the existing financial condition both of the city and of the Interborough Rapid Transit Company. It is estimated that the cost of the work would be from $1,250,000 to $1,500,000, which would be exclusive of the cost of acquisition of any real estate or easements that might be required.

Express Service Planned.—Negotiations have been completed whereby competitive railway express service will be re-established in Indianapolis and in points south of Indianapolis to Louisville. This announcement was made by Bert Weedon, traffic manager of the Interstate Public Service Company, operating a traction line between Indianapolis and Louisville. Mr. Weedon, for the interurban company, and J. E. Skaggs of Atlanta, Ga., representing the Southeastern Express Company, signed a contract for the service on the

Interstate line. The company soon will establish in Indianapolis a motor pickup and delivery service and will operate station service at other points south of Indianapolis. Through express trains are to be scheduled, serving both Indianapolis and Louisville, these trains making connections with trains for points south over the Southern railway system.

No Accident Record Rewarded. — Accidents on the line of the Groton & Stonington Traction Company and the Shore Line Electric Railway have practically all been minor ones during the past six months. This fact was brought out by Superintendent O'Brien, who gave a brief discourse on accident prevention at a recent meeting of employees and officials of the properties in Mystic, Conn. Gold pieces were awarded to the trolley employees who had no accidents or who had been exonerated from accidents, as well as having a clean record for courtesy and punctuality. D. C. Peck, manager and R. W. Perkins, president and receiver, spoke on accident prevention and complimented the men in minimizing the number of mishaps on the road. James Hammond of the New London Chamber of Commerce gave an interesting talk on the trolley situation from the point of view of an outsider.

Legal Notes

CALIFORNIA—*Care Required in Crossing Tracks of Electric Railway.*

As much care is required of a person crossing the tracks of an electric railway upon a private right-of-way in the open country as is required of a person crossing the tracks of a steam railway. [New York Lubricating Oil Company vs. United Railroads of San Francisco, 215 Pacific Rep. 72.]

FEDERAL COURTS—*Payment for Transportation by Railway Operated by the State Held Not for Services Rendered to State.*

Payments by a railway company which was being operated by agents of the state, but not owned by the state, for coal transported by the company, which came from the operating revenues of the corporation and not from the state funds, though they might later appear in a deficit which the state agreed to make good, are not payments by the state within the exception from the 3 per cent internal revenue tax on payments for transportation by water consigned from one point in the United States to another. [Case of Boston Elevated Railway, 288 Federal Rep. 864.]

FEDERAL COURTS — *Confiscatory Rate Valid if by Contract — Order of Commission on Seating Capacity.*

When a contract between a municipality and an electric railway company fixing rates is valid, the Supreme Court is not concerned with the question whether the stipulated rates are confiscatory.

Where a contract between a town and an electric railroad company prescribed the rate of fare chargeable between such town and a city, a statute construed as making such rates applicable in territory thereafter annexed to the town impaired the obligation of the contract by adding to its burdens.

An order of a state railroad commission, directing an electric railroad company to provide additional seating capacity on some lines and trailers on a line on which rates were fixed by contract with a municipality, was not beyond its power to require adequate service, where there was nothing in the contract in conflict therewith. [Georgia Railway & Power Company et al. vs. Town of Decatur, 43 Supreme Court Rep. 613.]

FEDERAL COURTS — *Annexed Territory —Order to Issue Transfers—Contract Fixing Fare Applies in Either Direction.*

Where contract between a municipality and an electric railway company fixed the fare chargeable between the municipality and another city, the application of such fare to territory afterwards annexed to the municipality impaired the obligation of the contract.

Where a contract between a city and an electric railway company, fixing the fare chargeable between such city and another city, contained no provision on the subject of transfers, an order of the railroad commission requiring the issuance of free transfers was erroneous.

A contract between the city of C. and an electric railway company limiting the fare chargeable from C. to A. to 5 cents, required passengers to be carried in either direction between C. and A. at the stipulated rate, especially where this construction agreed with the practice followed for many years. [Georgia Railway & Power Company et al. vs. Mayor and Council of City of College Park, 43 Supreme Court Rep. 617.]

MICHIGAN — *Duty of Motorman to Know that Passengers Are Safely on Board Before Starting Car.*

Where a car had stopped, not to permit boarding or alighting of passengers, but to permit the conductor to replace the trolley, and plaintiff in accordance with custom attempted to board the car at that place, and did succeed in gaining entrance to the steps, from which he fell, held, that it was the duty of conductor, before signaling to proceed, to ascertain that all passengers were safely on board; "on board" meaning within the closed doors. A passenger standing on the steps cannot be said to have voluntarily remained there, so as assume the risk of injury from maintaining that position, if he could not have reached a position on the platform or in the car, without pushing or shoving through passengers who had crowded the only other available standing places. [Morris vs. Detroit United Railway, 193 Northwest Rep. 871.]

MINNESOTA—*Purchaser of Electric Line Subject to Contract Prohibition Against Use of Steam Power.*

Where a municipal corporation and an electric traction company have agreed upon the terms by which streets may be crossed by an electric railway, and the use of steam as a motive power is prohibited by such contract, a purchaser of the electric traction company's line takes it subject to such prohibition. But such a contract does not limit the power of the purchasing company, if it has such power, to acquire by condemnation the right to use the street crossings for a steam railway. [St. Louis Park vs. Minneapolis, Northfield & Southern Railway, 194 Northwest Rep. 327.]

MINNESOTA—*"Right" Defined as Used in Statute Regulating Traffic.*

The word "right" in Gen. St. Supp. 1917, sec. 2552, subd. 2, providing that at street intersections the driver of a vehicle shall give the right of way to any vehicle approaching from his "right," means the right of the vehicle in the direction in which it is approaching the intersection, and not the right hand of the driver if he is backing. [St. Clair vs. Duluth Street Railway, Northwest Rep. 690.]

OKLAHOMA — *Company Liable for Injuries to Livestock by Failure to Fence.*

Failure of a railway company to maintain a right-of-way fence, as required by sections 1435-1438, inclusive, Rev. Laws Okl. 1910, constitutes negligence, and such company is liable for injuries to livestock resulting therefrom. [Muskogee Electric Traction Co. vs. Minugh, 215 Pacific Rep. 747.]

TEXAS—*Instruction in Personal Injury Case Precluding a Verdict for Defendant, Though Plaintiff's Negligence Was Sole Proximate Cause, Held Erroneous.*

In an action for personal injuries sustained by plaintiff while riding in an automobile when struck by defendant's street car, the giving of an instruction that the jury could not find for defendant even though negligence of the automobile driver was the sole proximate cause of the injury, if they found that defendant was "guilty of negligence in any respect" held reversible error. Such a charge precluded the company from having its defense as to the proximate cause of the injury presented clearly and untrammeled by other matters to the jury, as it had a right to have done. [Texas Electric Railways vs. Sikes et al., 251 Southwest Rep. 589.]

Personal Items

J. H. Aitken Leaves Schenectady Railway

J. H. Aitken, secretary, treasurer and purchasing agent of the Schenectady Railway, will resign on Nov. 1 after twenty-one years' service.

Mr. Aitken became purchasing agent of the Schenectady Railway in 1902, when the General Electric Company took over the ownership and management of the lines. In 1905, when the General Electric Company sold the road to the New York Central and Delaware & Hudson companies, the present owners, Mr. Aitken succeeded James O. Carr as secretary and treasurer. He retained his purchasing agent duties and since 1905 has served the company in all three capacities.

It is said that Mr. Aitken wished to resign months ago, but that the company officers prevailed upon him to remain for the time being. Conforming to this desire Mr. Aitken withheld his resignation until the Sept. 26 meeting of the board of directors in New York, when it was received and accepted. Mr. Aitken said he would rest and travel for some months before entering upon some new business undertakings.

No announcement has been made of Mr. Aitken's successor.

Hamilton Baluss Retires from Railway Field

Hamilton Baluss, general manager of the Susquehanna Traction Company, Lock Haven, Pa., resigned that position on Oct. 1 to take an extended vacation. Mr. Baluss has been a prominent figure in the railway field since 1898, when he entered the employ of the Detroit, Ypsilanti & Ann Arbor Electric Railway. He left that company to go with the Van Dorn & Dutton Electric Company, Cleveland. Later he became identified with the Grand Rapids, Holland & Chicago Electric Railway, and following that he was employed by the Chicago & Joliet Electric Railway. He resigned his position with the last-named property to become general manager of the Marquette, City & Presque Isle Electric Railway of Marquette, Mich.

Following this appointment, Mr. Baluss went to the property he is now with, as general manager. He later became general superintendent of the Cincinnati, Georgetown & Portsmouth Railroad of Cincinnati and left there to become general manager of the Westchester, Kennett & Wilmington Electric Railway of Kennett Square, with which he was connected for nearly twelve years. When the war broke out Mr. Baluss wanted to get "in" and accordingly became chief army inspector of the Philadelphia district of the United States Ordnance Department. He retained this position until Jan. 15 following the armistice, but when things became normal again Mr. Baluss thought that his best work was done in the railway field, so he went back to his old work as general manager of the Susquehanna Traction Company. He has kept that position up to the present time. Mr. Baluss was graduated from the Detroit High School and took up the study of law.

New Youngstown Manager

C. S. MacCalla, Recently Appointed, Has Entered Fully Upon His Duties

C. S. MacCalla has entered actively upon his duties as vice-president and general manager of the Pennsylvania-Ohio Electric Company and the Youngstown Municipal Railway and other subsidiaries of the Pennsylvania-Ohio System operating city railway lines in and interurban lines between Youngstown and Warren, Ohio, and Sharon and New Castle, Pa.

C. S. MacCalla

Mr. MacCalla brings to his new field of activity a wide and varied experience in public utility operation, both in the railway and in the light and power divisions of the electrical industry. He was born in Wallingford, Pa., in 1876. Immediately upon leaving Lehigh University, where he was graduated in 1896, Mr. MacCalla began his work with public utilities, spending brief periods in the installation department of the Philadelphia Bell Telephone Company and as a "trouble shooter" for the Edison Electric Light Company, Philadelphia, now the Philadelphia Electric Company. Then followed four years with the Edison Electric Illuminating Company of Brooklyn (Brooklyn Edison Company) successively as draftsman, construction boss and general construction foreman.

As indicated in the ELECTRIC RAILWAY JOURNAL for Sept. 8 at the time of the announcement of Mr. MacCalla's appointment to the properties at Youngstown, his active electric railway experience began in 1901 when Mr. MacCalla joined the foreign department of the General Electric Company as principal assistant engineer in charge of the installation and initial operation of the Sydney, Australia, tramways system for the New South Wales government, the work including the installation of the steam-electric generating plant, substations and railway equipment, the system being the then largest three-phase plant south of the equator.

In 1903 Mr. MacCalla went to the Pacific Coast, where he was identified with the Washington Water Power Company, Spokane, Wash., for fifteen years, successively as assistant to the general manager, assistant general manager, general manager and vice-president and general manager, continuing in the last named position for five years, and having full charge of operations, both power and railway, in Spokane and some thirty-odd smaller cities and towns within a radius of 100 miles. He equipped the Spokane city railways with one-man Birney safety cars, the installation being the first in any city of more than 100,000 population. Returning to the east, Mr. MacCalla was elected vice-president and general manager of the Virginian Power Company, Charleston, W. Va.

General Tripp Going to Japan

General Guy E. Tripp, chairman of the board of the Westinghouse Electric & Manufacturing Company, and Loyall A. Osborne, president of the Westinghouse International Company, left New York for Japan on Oct. 4. They will sail from San Francisco on Oct. 10 and expect to visit Shanghai, Hongkong, Peking and the Philippines before returning home.

C. L. Harris has succeeded M. B. Gouty as chief engineer of the power station of the Indiana Service Corporation.

H. L. Hawkins, engineer of maintenance of way of the Seattle & Rainier Valley Railway, is in addition fulfilling the duties of master mechanic.

Paul R. Goldey has succeeded M. T. Montgomery as superintendent, claim agent and purchasing agent of the Atlantic & Suburban Railway, Pleasantville, N. J.

John T. Harrington, who has been vice-president and general counsel of the Pennsylvania-Ohio Power & Light Company, Youngstown, Ohio, has been elected president of that company. Mr. Harrington will continue as general counsel of the company.

Carl E. Keefer, machinist in the Altoona and Tyrone electric plants of the Altoona & Logan Valley Electric Railway, was appointed master mechanic effective on Aug. 15, succeeding Robert Long. Mr. Long resigned to take a position as test engineer of the Texas Oil Company, with headquarters in Columbus, Ohio.

Manufactures and the Markets

News of and for Manufacturers—Market and Trade Conditions
A Department Open to Railways and Manufacturers
for Discussion of Manufacturing and Sales Matters

Orders Continue at High Level

A compilation of orders for new passenger cars placed during the first six months of 1923 was shown in several tables in the issue of Sept. 29. The number of cars ordered during this half-year period is slightly greater than one-half the total number of passenger cars ordered during the entire year of 1922. This augurs well for the car building industry and also shows that the high buying levels of 1916 and 1920 are being reached or exceeded.

The outstanding fact shown by these tables is the large number of one-man two-man double-truck cars which are being ordered. There were a total of 1,011 of these reported for city service and thirty-six for interurban service. Buying of single-truck one-man cars of the 28-ft. body type still continues, particularly on small electric railway properties, but the total number of these ordered is very much less than for preceding years. There were a total of 147 of this type ordered during the first six months of 1923 as compared with a total of 762 for the entire year of 1922.

The largest individual orders placed were for 520 one-man two-man cars for the Philadelphia Rapid Transit Company, and 200 of a similar type for the Brooklyn City Railroad. Both of these companies ordered cars with front entrance and center exit doors arranged for pay-as-you-pass fare collection. Of the cars ordered by the Philadelphia Rapid Transit Company, 135 are of the double-end type with end doors only.

In the tabulation of passenger cars ordered by individual companies the railways in each state were alphabetically arranged and the various states were grouped into four districts, in a manner similar to that followed in the Annual Statistical Number of the JOURNAL for previous years. As was to be expected the district north of the Ohio River and east of the Mississippi River purchased the greatest number of cars.

Predicts Good Electrical Future Abroad

In the opinion of A. W. Burchard, vice-chairman of the General Electric Company and president of the International General Electric Company, the future of the electrical industry in Europe is promising. Mr. Burchard has just returned from a two-months' trip after visiting foreign affiliated companies in England, Spain, France, Belgium and Holland.

After looking things over abroad, Mr. Burchard estimates the business of the International General Electric Company will amount to about $21,000,000 this year. Bookings of the General Electric Company since the first of July amount to between $5,000,000 and $6,000,000 weekly, with cash on hand about the same as it was at the first of the year—about $86,000,000.

Comparing the situation today with what it was a year ago, Mr. Burchard says that the business in the company's factories abroad is better, particularly in France and Italy. He said the Italian factories were running at capacity and that in England the British Thomson-Houston Company, the affiliated foreign company, was employing more men on its payrolls than ever before and was running at capacity. He said that the electrical industry in England, regarding unemployment, was in very good shape and that there was nothing like as much unemployment as there was in other lines such as the textile industry.

The Compagnie Française Thomson-Houston, the affiliated French company, had secured a contract for the electrification of the Paris-Orleans Railroad, amounting to about 100,000,000 francs, and Mr. Burchard said that about 25 per cent of this order will be manufactured in America by the General Electric Company.

Another Brazilian Electrification

A contract for the electrification of the Campos do Jordao Railway, in Brazil, has been awarded to the English Electric Company by the government of São Paulo, according to the London *Engineer*. This contract covers the electrification of an existing meter-gage railway and includes the supply and erection of about 30 miles of overhead catenary construction, on the 1,500-volt d.c. system, and from 15 miles of 30,000-volt 3-phase transmission line. The contract also includes the building and equipment of a substation, as well as motor coaches for passenger and goods service. The 30,000-volt, 50-cycle supply current will be transformed down to 2,000 volts at the substation, where a 500-kw. synchronous motor-generator set will convert it into direct current at 1,500 volts.

The coaches are to seat forty passengers each and the goods wagons are to be of the covered type and are to carry 10 tons. Electrical equipment of each type of motor coach will comprise four self-ventilated traction motors, each wound for 750 volts. The motors are connected two in series and the two pairs in series parallel.

The electrification of this line is of particular interest by reason of the fact that one-third of the total route length is level, the remainder, consisting of some 8 miles of track, having gradients which vary from 6 per cent to 10.5 per cent. In view of this, the motor coaches are to be equipped with four different braking systems, viz.: hand, air, rheostatic and electromagnetic track brakes, of which the last named is intended for use in emergencies only.

ELECTRIC RAILWAY MATERIAL PRICES—OCT. 2, 1923

Metals—New York

Copper, electrolytic, cents per lb.	13.25
Lead, cents per lb.	6.875
Nickel, cents per lb.	29.50
Zinc, cents per lb.	6.65
Tin Straits, cents per lb.	41.875
Aluminum, 98 to 99 per cent, cents per lb.	25.20
Babbitt metal, warehouse, cents per lb.:	
Fair grade	52.00
Commercial	25.00

Bituminous Coal

Smokeless mine run, f.o.b. vessel, Hampton Roads	$4.825
Somerset mine run, Boston	2.375
Pittsburgh mine run, Pittsburgh	2.05
Franklin, Ill., screenings, Chicago	1.30
Central, Ill., screenings, Chicago	0.95
Kansas screenings, Kansas City	2.625

Track Materials—Pittsburgh

Standard Bessemer steel rails, gross ton	$43.00
Standard open hearth rails, gross ton	43.00
Railroad spikes, drive, Pittsburgh base, cents per lb.	3.15
Tie plates (flat type), cents per lb.	2.575
Angle bars, cents per lb.	2.75
Rail bolts and nuts, Pittsburgh base, cents, lb.	4.125
Steel bars, cents per lb.	2.40
Ties, white oak, Chicago, 6 in.x8 in.x8½ ft.	$1.50

Hardware—Pittsburgh

Wire nails, base per keg	3.00
Sheet iron (28 gage), cents per lb.	3.75
Sheet iron, galvanized (28 gage), cents per lb.	5.00
Galvanized barbed wire, cents per lb.	3.80
Galvanized wire, ordinary, cents per lb.	3.35

Waste—New York

Waste, wool, cents per lb.	12–16
Waste, cotton (100 lb. bale), cents per lb.:	
White	11–13.50
Colored	8–13

Paints, Putty and Glass—New York

Linseed oil (5 bbl. lots), per gal.	$0.97
White lead (100 lb. keg), cents per lb.	11.375
Turpentine (bbl. lots), per gal.	$0.98
Car window glass, (single strength), first three brackets, A quality, discount*	84.0%
Car window glass, (single strength), first three brackets, B quality, discount*	86.0%
Car window glass, (double strength) all sizes, A quality, discount*	85.0%
Putty, 100 lb. tins, cents per lb.	4.75

*These prices are f.o.b. works, boxing charges extra.

Wire—New York

Copper wire base, cents per lb.	16.00
Rubber-covered wire, No. 14, per 1,000 ft.	$6.60
Weatherproof wire base, cents per lb.	18.00

Paving Materials

Paving stone, granite, 4x8x4, f.o.b. Chicago, dressed, per sq.yd.	$3.50
Common, per sq.yd.	3.10
Wood block paving 3½, 16 treatment, N. Y., per sq.yd.	2.79
Paving brick 3½x8½x4, N. Y., per 1,000 in carload lots	54.00
Crushed stone, ¾-in., carload lots, N. Y., per cu.yd.	1.75
Cement, Chicago consumers net prices, without bags	2.20
Gravel, ¾-in., cu.yd., f. o. b. N. Y.	1.75
Sand, cu.yd., N. Y.	1.25

Old Metals—New York

Heavy copper, cents per lb.	10 75
Light copper, cents per lb.	9.75
Heavy brass, cents per lb.	5.75
Zinc, old scrap, cents per lb.	4.25
Yellow brass, cents per lb. (heavy)	6.00
Lead, heavy, cents per lb.	5.75
Steel car axles, Chicago, net ton	$17.75
Old car wheels, Chicago, gross ton	19.25
Rails (short), Chicago, gross ton	19.25
Rails, (relaying), Chicago, gross ton	33.50
Machine turnings, Chicago, net ton	8.25

Rolling Stock

Kansas City Railways wants to remodel eighty-five of the "600" type of cars so that they can be used as one-man or two-man cars. The cost of remodeling these is estimated at $38,165.

Saginaw Transit Company has placed orders for fifteen Reo and ten White motor buses. The cost of this equipment is $122,000 and first deliveries will be received by Nov. 1.

Illinois Traction, Inc., Illinois Valley Division, formerly the Chicago, Ottawa & Peoria Railway, is considering the inauguration of service with lightweight one-man cars in place of its present heavy two-man cars.

Trenton & Mercer County Traction Corporation, Trenton, N. J., has been given permission to destroy two single-truck cars and charge the sum of $6,200 to the company's depreciation fund. The two cars destroyed were a line and an emergency car, which had been replaced by double-truck cars for the same service. The new cars cost $7,500 each.

Wisconsin Traction, Light, Heat & Power Company, Appleton, Wis., has purchased nine cars which have been used on the lines of the Milwaukee Electric Railway & Light Company but have been rebuilt. The purchase includes six forty-six-passenger interurban cars weighing 24 tons each equipped with four 70-hp. motors. The other three cars are of the city one-man, p.a.y.e. type.

Cumberland County Power & Light Company, Portland, Me., received delivery last month of six cars, the order for which was placed in April of this year. The specifications of these cars follow:

Builder of car body	Wason
Type of car	D. T. one-man or two men
Seating capacity	Forty-six
Total weight	31,000 lb.
Length over all	40 ft. 3 in.
Truck wheelbase	5 ft. 4 in.
Width over all	8 ft. 2⅞ in.
Height, rail to trolley base	10 ft. 1⅛ in.
Body	Steel
Interior trim	Mahogany
Headlining	None
Roof	Arch
Air brakes	G.E.
Axles	Brill
Bumpers	Brill
Car signal system	Consolidated
Center and side bearings	Brill
Control	K-35 J.J. G.E.
Couplers	Brill
Curtain fixtures	Brill
Destination signs	Hunter
Door-operating mechanism	National Pneumatic
Gears and pinions	General Electric
Hand brakes	Brill
Heater equipment	Consolidated
Headlights	Golden Glow
Journal boxes	Brill
Lightning arresters	General Electric
Motors, type and number	G.E. 24 7B-4
Motors	Inside hung
Enamel	Sherman Williams
Registers	International
Sanders	O.B.
Sash fixtures	Mahogany
Seats	Brill Waylo
Seating material	Wood
Springs	Brill
Step treads	Brill
Trolley catchers or retrievers	Keystone
Trolley base	V.S. 13
Trucks	Brill 77 E 1
Ventilators	Brill
Wheels	Steel—26 in.
Special devices	Full safety equipment and selective valve

Bryan-College Traction Company, Bryan, Tex., has purchased three large motor buses.

Lackawanna & Wyoming Valley Railroad, Scranton, Pa., has purchased four new passenger cars for service between Wilkes-Barre and Scranton. The total cost is $115,000 and the cars are to go into service on or before April 1, 1924.

Indiana Service Corporation, Fort Wayne, has placed orders with the Differential Steel Car Company of Findlay, Ohio, for six Differential door-chute trail cars of 60,000 lb. capacity, of the following specifications:

Tilting body made of ¼-in. steel plate, reinforced; body divided into three compartments, each of which is to be 8 ft. 1 in. long at the floor; two center partitions to extend to top of sideboards, with end sheets rounded and with center section 14 in. above the sideboards; each compartment equipped with two doors, one at each side, hinged at top to permit of dropping; body 19½ in. from floor to top of sideboards, 7 ft. 6 in. wide and 27 ft. 1 in. long; equipped with electric dumping motor of 5 hp. capacity; M.C.B. trucks, 50 ton, and M.C.B. radial couplers; 33 in. wheels; car is 40 ft. 6 in. over end sills, 8 ft. 2 in. maximum width and about 6 ft. 6 in. from rail to top of sideboards when on 33 in. wheels; equipped with air and hand brakes. Tilting body is so arranged that it can be moved from central position about 24 in. to either side and revolved through an angle of 45 deg. and automatically stopped when it reaches this discharge angle; time required for this operation, including return of body to central position, is about one minute and is effected by one man moving a controller handle in the direction the car body is to be tilted; dumping controller fitted with automatic cut-off so that body will stop when it reaches the discharge angle of 45 deg.; controller lever located on platform of car.

The company has also ordered four Differential bottom dump ballast-spreading cars of 60,000 lb. capacity, equipped with M.C.B. trucks and M.C.B. couplers. Some specifications of these cars follow:

Both air and hand brakes; center dump doors may be operated by means of worm gear, or may be opened and closed by means of hand wheels on end platforms or at the sides of the car; doors divided into three parts, each one of which can be kept closed and the others opened for discharging material; doors built of steel plate and may be used to spread ballast as it is dumped.

Track and Line

Wisconsin Railway, Light & Power Company, La Crosse, Wis., has completed its double-track system on Main Street.

Kansas City Railways has made application to Judge Stone of the Federal court to spend $277,167 on improvements. Among the projects listed is the rebuilding of several lines.

Southern New York Power & Railway Corporation, Oneonta, N. Y., has made application to the Public Service Commission for permission to construct and operate over tracks in Chestnut Street between Main and Market Streets in Oneonta under a franchise granted by the city.

San Francisco, Cal. — Construction work on the Embarcadero subway under the Ferry Street car loop will begin within the next few months. The cost of the project, which is estimated at $425,000, will be divided among the Harbor Commission, the city and the two railway systems, viz., the Municipal Railways of San Francisco and the Market Street Railway.

Ohio Valley Electric Railway, Huntington, W. Va., will relay its line on a concrete base, and the city will repair depressions in the pavement. The relaying is caused by the removal of the Twentieth Street viaduct in Huntington to the center of the driveway. This was decided upon after an inspection made jointly by the company officials and city commissioners.

Trade Notes

Westinghouse Traction Brake Company, Wilmerding, Pa., has announced the appointment of John B. Wright as assistant to the vice-president, with headquarters at the general offices in Wilmerding, Pa. In addition to this position Mr. Wright will also retain the title of assistant district manager, in charge of the company's commercial activities in the Pittsburgh district, a position which he has held since January, 1920. Mr. Wright has been a member of the Traction Brake organization since 1899.

Elliott Service Company, New York, has announced through James Elliott, president, the development of a service which will make it possible for the electric railway in any city—either alone or in co-operation with other interests and under the auspices of a representative civic organization such as the chamber of commerce—to conduct a carefully organized year-round public safety campaign for less than the cost of one fatal accident. The service includes complete plans for organizing a community wide safety campaign and all of the materials which it is necessary to use in such a campaign. The plan is based on the experience of all of the cities that have conducted successful public safety campaigns within the last five years. The materials will enable any city to carry on a Safety Week to start the permanent campaign; safety instruction in the public schools; a continuous safety poster campaign; a free safety school for commercial drivers, and a permanent educational publicity campaign. C. W. Price, who directed the Public Safety Campaigns in New York City, Washington, Baltimore, Pittsburgh and Louisville, Ky., is now vice-president of the Elliott Service Company, in charge of the Public Safety Division. Where necessary, the campaign will be started under the personal supervision of Mr. Price, Dr. E. George Payne, and Louis Resnick, all of whom have had wide experience in work of this kind. The Elliott Service Company heretofore has confined its safety activities to the development of materials for use in industrial safety campaigns. The complete service of this company on public safety will be shown for the first time at Atlantic City during the convention of the American Electric Railway Association.